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RAYMOND B. MANNING: AN APPRECIATION

Ray and Lilly Manning at the Second European Crustacean Conference, Liege, Belgium, September, 1996.

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As The Crustacean Society completes its thirtieeth year of existence, it is time to reflect and appropriately commemorate this anniversary with an appreciation of Raymond B. Manning. This memorial augments the brief biographical sketch presented by Lemaitre and Reed (2000). On the day this issue of Journal of Crustacean Biology is being published, 11 October 2009, Ray would have been 75 and undoubly would have been proud of what the society has achieved in just three decades.

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Education

Raymond Brendan Manning was born in Brooklyn, New York on 11 October 1934 and was almost immediately moved by his mother, Elizabeth Smith, to Haiti where they resided until the begining of WWII. The family then decided to move back to the USA taking up residence in Bethesda, Maryland, near Washington, D.C. Ray's adopted father, Franklin Brown Manning, inherited a house overlooking Port-au-Prince so after the war the Manning household returned to Haiti (Fig. 2, upper left).

At the age of twelve, young master Manning was sent off to Saint Leo, a Catholic Benedictine boarding school in Tampa, Florida by his stepfather who considered that Ray would develop more if he were away from his mother. This was indeed true; Ray received an excellent education

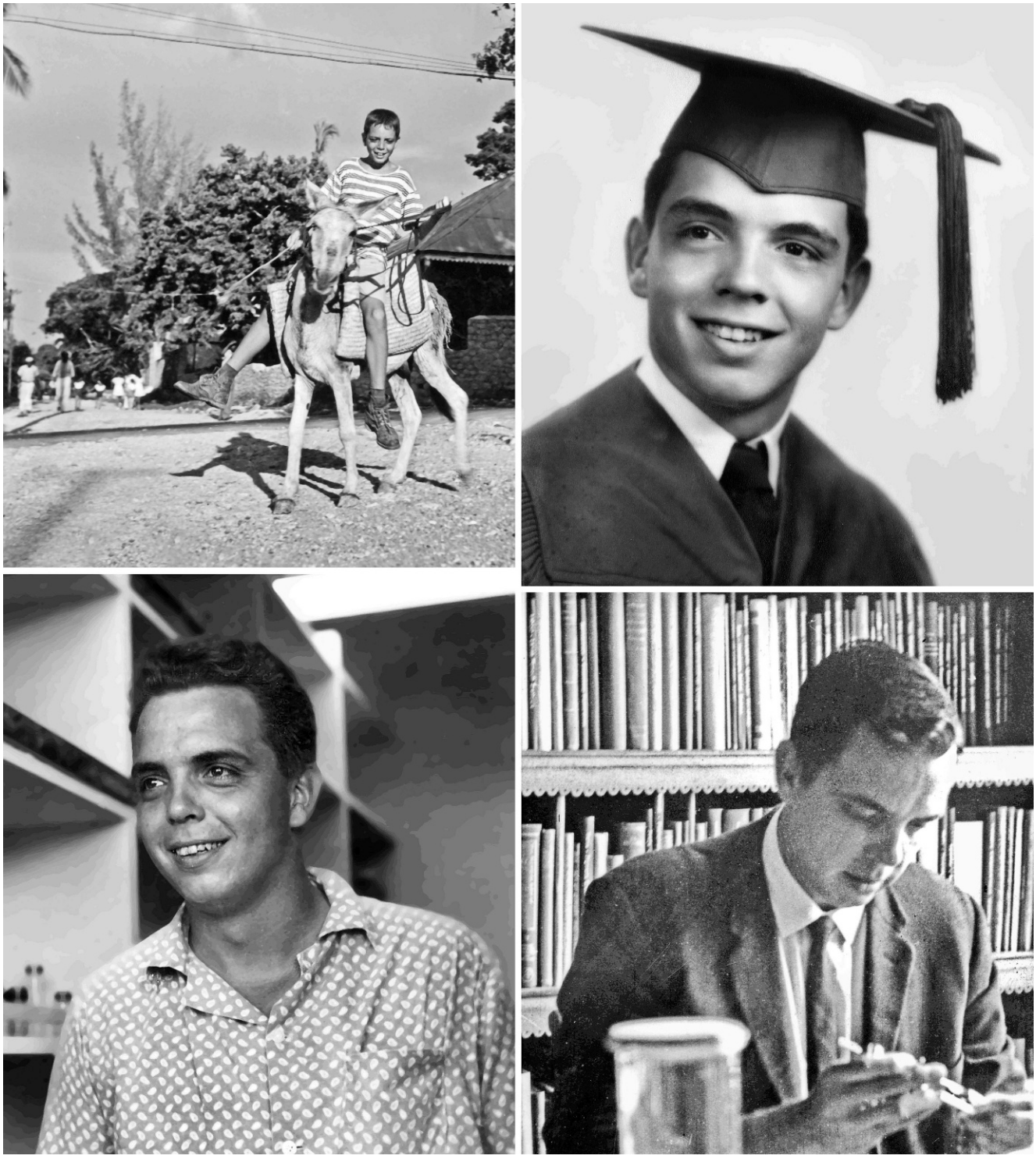

Fig. 2. Ray Manning in his younger years. Upper Left, age 12, Haiti, 1946; Upper Right, graduation from St. Leo School, Tampa, Florida, 1951; Lower Left, in graduate school, University of Miami, 1960; Lower Right, in the office of Lipke Holthuis, Rijksmuseum, Leiden, middle 1960s.

(Fig. 2, upper right), so much so that he learned little new academically for a period of time at the University of Florida and cruised through the first two years (Lilly and Ray, personal communication).

Two significant life long relationships started while Ray was at university. He met Lilly; they married, and she would pen the many figures illustrating Ray's boundless crustacean descriptions. Ray later wrote, ''Note that my productivity is dependant upon the availability of funds to have figures prepared. My wife has been my illustrator for more than 30 years and the fact that she could travel with me to prepare color sketches in the field and figures in museums elsewhere has materially aided my productivity.'' Later, Blow and Manning (1996c) named a brachyuran fossil in honour of

Lilly, *Santeella lillyae*. The etymology for this species reads, ''This species is named for Lilly King Manning, in recognition of her vast contribution to systematic crustacean research through her thousands of scientific illustrations and in appreciation for her ongoing support.'' Ray's productivity was undeniably outstanding and for certain Lilly supported his contributions to natural science.

At the University of Miami, Professor Gilbert Voss introduced Raymond to Lipke Holthuis in 1960, and they immediately became good friends. In fact, it was Lipke who encouraged Ray to study stomatopods (Fig. 2, lower right). The two colleages had many happy times working in the field together, including several major cruises. Their collaboration would eventually produce fourteen papers including the West African classic (Manning and Holthuis, 1981a) and a revision of Geryonidae (Manning and Holthuis, 1989a). Their last meeting was after the Amsterdam congress in July 1998 when Lilly and Ray went to visit Lipke in Leiden and see his new laboratory. By this time Ray was quite ill, but immediately he and Lipke began looking up something of importance to them. Lilly had to leave because she had tears running down her face knowing that these two old friends would never see each other again.

Ray graduated from the University of Miami in 1956 majoring in Zoology, with Botany as a minor. He was awarded his masters in 1959 (see Manning, 1959) and completed his doctorate in 1963. While at Miami (Fig. 2, lower left), Ray was employed as a Research Instructor from February 1958 to June 1963. From 1970 to 1990 he was invested as Adjunct Professor at the University of Maryland, George Washington University, and the University of Miami.

Smithsonian Institution

Ray joined the Department of Invertebrate Zoology, National Museum of Natural History, in June 1963 as an Associate Curator, a rank he held until March 1965. His research speciality was Crustacea. Promotion was rapid and at regular intervals: Supervisor in March 1965, Chairman in April 1967, and Chairman Curator May 1970. After 28 years, Ray was promoted to Senior Zoologist, the highest scientific position in the Museum. By the end, Ray had logged in an outstanding museum career at the Smithsonian Institution, Washington, D.C.

Ray served as Chairman of the Department of Invertebrate Zoology from 1967 to 1971. He wanted to provide the best atmosphere for research. He recorded that in 1966 the IZ staff published 31 papers totalling some 593 pages, and by 1972 the same staff published 45 papers totalling 1300 pages. Ray also wanted to increase the IZ operating budget as in 1968 it was $31,400, but it had decreased to $6400 in 1971. However, due to the efforts of Ray, their budget was increased to $63,000 in 1972. This increase included funding for two new line item programmes developed by Ray. The first project was for baseline surveys in Panama and the other to study invertebrates collected by the International Indian Ocean Expedition. Ray also wanted more curatorial flexibility to use one position for a visiting curator so that the invertebrate group could use expertise in different areas of the collection for varying terms to complement department staff expertise. Furthermore, he wanted to broaden the education activities of IZ curators by developing co-operative education agreements with universities. As though all this were not enough work, Ray completed more than 20 papers while serving as Departmental Chair.

Research Publications

Ray had an outstanding publication record. To date, Ray has published 290 papers. Of these 25 (1958-1963c) were published as a graduate student before joining the staff of the Smithsonian Institution. He submitted an additional 125 papers (1963d-1983b) for his peer review interview in 1984 and a total of 218 papers (to 1990j) for merit promotion to Senior Zoologist. Eight papers were published posthumously (2000d-2006).

Ray continually pointed out how little we know about marine invertebrates in general, and this he believed could not be overstated. As an example, he pointed out that populations identified in the past with two species of geryonid crabs actually represented 18 different species; and, according to Ray, this was the rule, not the exception. In this, Ray followed Nancy Knowlton from the Smithsonian Tropical Research Institution who studied alpheid shrimps. She had commented to Ray that each species she has studied in the field has proved to be on average four species. This was why Ray spent so much time in the field, and he considered this statement by Nancy reflected our general knowledge of marine invertebrates at the species level. As a consequence, Ray made no apologies for concentrating on species, their identity, their biology, and their zoogeography, rather than their phylogeny. As he pointed out to the delegates attending the International Crustacean Conference held in Brisbane in 1990: ''In Crustacea, at least, one cannot identify squat to species level with a cladogram, a line of best fit, or information on molecular makeup. One must have specimens, keys, descriptions, field observations, and clear figures of species in order to identify species. Basic knowledge of species remains the most pressing need in marine zoology, as all kinds of studies are dependant upon knowledge of species.'' His publication record reflects this uncompromising passion towards alpha taxonomy.

Out of 290 papers, over half (153) were published on Stomatopoda. Of these 98 were devoted to the description of new species and genera. Many of these taxa were named in honour of friends, colleagues, and well-known carcinologists. Ray published widely on other stomatopod subjects as well, including a number of checklists, seven papers on eyes (mostly with Schiff and Abbott), eight on larvae, six on new records, six on nomenclatorial procedures within the group, and eight general studies of this fascinating taxon. Without doubt, Ray Manning was the worlds leading authority on Stomatopoda.

Moreover, Ray published over 50 brachyuran manuscripts: on geryonids, Dorripidae, gall crabs, and thirteen on Pinnotheridae. Also, included here is the outstanding West Africa brachyuran crabs published jointly with Lipke.

Callianassidae was another favourite taxon of Ray's for which he published around twenty papers. Eight of these

were done jointly with his great friend Darryl Felder. Darryl was heavily into callianassidid burrow casts and remarked to Ray how deep they were reaching – over 2 m below the surface of the beach, with radiating branches. Ray and Darryl considered that they were not successfully selling folks on the depth and density of these burrows in most near shore habitats. Ray joked that it was just too bad the damn things did not stick up instead of down, so people could see them. Ray was fascinated with this, ''imagine if they were stood upright above the beach, it would be like walking through a forest.'' Darryl later sneaked this concept into a paper and presented at the Ft. Pierce TCS meetings (Felder and Mouton) by sketching a cartoon (see Fig. 5) and properly credited the concept to Ray who was in the audience. Ray loved it!

Carideans too did not escape the Manning treatment either with over ten publications including seven devoted to new species descriptions. He also found time to write on lobsters, fossil crabs, anomurans, and decapods in general.

Ray Manning was an extremely productive carcinologist.

Significant Early Publications

Some of Ray's early publications deserve special mention.

The discovery of *Procaris*, a caridean with undifferentiated legs (normally carideans have two or three legs with chelae) stimulated much research on the morphology and phylogeny of decapod Crustacea, especially the carideans. Chace and Manning (1972f) assigned *Procaris* to its own subfamily within Caridea while describing its similarities with the distinct group the ''Penaeoidea.'' Abele and Felgenhauer (1986) had placed the genus either in Caridea, or near to this group in a distinct taxon. Christoffersen (1990) also kept this taxon separate from the carideans.

The collaboration by Manning, Hart, and Iliffe (1986n) on cave shrimps demonstrated that the components of marine caves, including the interstices of laval and limestone rock, ranging from seams to grottos and from the surface to the ocean floor, are ancient. One suggestion prior to their work was that cave faunas have been stranded on the shores of receding palaeo-seas (see Stock, 1977). However, Manning, Hart, and Iliffe found this hypothesis difficult to accept since many inhabitants of marine caves show affinities with deep-sea organisms. Some shrimps of the genera *Procaris* and *Typhalatya* occurred in caves on Ascension (1-2 myo) and Bermuda (at least 110 myo). According to Ray and his co-authors, the only link between these islands is that they both originated along the Mid-Atlantic Oceanic Ridge. They postulated that these shrimps had resided in suitable habitats on the Mid-Atlantic Ridge and elsewhere since the Mesozoic. Their theory provided an isolating mechanism for other species of *Typhlatya* now restricted to freshwater habitats by proposing a saltwater origin for them. According to the records of Hart, their five cave papers (Hart and Manning, 1981h, 1986l; Iliffe et al., 1983a, Hart et al., 1985b; Manning et al., 1986n) were cited more than 80 times by 1987!

Manning and Holthuis studied deep-sea geryonids together. They produced a series of publications that refuted earlier claims that suggested only two species were widespread in continental slope habitats (see Manning and Holthuis, 1984l, 1986h, 1987h, 1988a, 1989a). In fact, from the material previously assigned to these two species, Manning and Holthuis identified 18 different species. The work of Ray and Lipke on this commercial taxon stimulated so much attention that other brachyuran workers began to look more closely at the geryonid crabs from their off shore waters. Ray noted, ''there was so much interest in this group now that my supply of 300 reprints of our 1986(h) paper has been exhausted by requests, and I have sent out more than 300 copies of our 1989(a) paper.'' To underline this point, Ray published a further ten papers describing new taxa of Geryonidae (see Manning, 1990b, 1992e, 1993d, 1993h, 1993l; Chirino-Gálvez and Manning, 1989b; Manning et al., 1989e; Manning et al., 1990h; Ghosh and Manning, 1993i; Ng and Manning, 1998a; Galil and Manning, 2001c).

The revision of the American Callianassidae by Manning and Felder (1991e) was another landmark publication in that it was the first attempt to clarify characters at the generic level from the region. This group of crustaceans was coming under increasing scrutiny because of the effects of their considerable burrowing activities. These could reach densities of up to 2400 individuals per square metre for some species. After their study, what was previously considered to comprise one family and two genera was divided into six families and 20 genera.

Ray published four classical monographs. Two as sole author on stomatopods (see Manning 1969c; 1977d) from the western Atlantic and West African coast, respectively. The other two were jointly with Lipke Holthuis; West African crabs (1981a) and Indo-Pacific dorippids (1990c). All four were important in that they were the starting point for future studies of these taxa in those areas. West African crabs superseded the outstanding work of Capart (1953) and Monod (1956). Ray and Lipke included original citations for all marine crab family-group names, and their synonyms, as well as original citations for some 150 genera. It is a model brachyuran study and an indispensable reference for anyone working on this Infraorder.

Two Long-Standing Large-Scale Studies

Ray completed two long-standing, large-scale studies late in his career. The Carcinological Society of Japan published *Stomatopod Crustacea of Vietnam: The Legacy of Raoul Serène*. According to Lilly, Raoul Serène visited the Manning household while they were residing in Tunisia. He presented Ray with a packet that contained a number of exquisite colour stomatopod paintings. These water coloured pictures had been produced on the back of cardboard laboratory wall charts cut to B5 size and painted by various members of Serène's research group in Viet Nam. Lilly recalls that Ray required more information with regard to these paintings. So, with the war in Viet Nam still raging, Raoul calmly and quietly slipped back into the country and gathered the required details. Ray actually presented a slide show of these beautiful illustrations at the Second European Crustacean Conference, Liége in 1996 and the assembled audience were absolutely captivated. However, there were a number of problems in getting these

coloured figures published, needless to say that among these cost was an issue. One quotation received for publication in the US was $3000 per figure and there were 38 figures! In the end, the Crustacean Society of Japan through the efforts of Keiji Baba and the generous patronage of Dr. Toshimitsu Odawara provided the necessary funds to see this project through to publication (see Manning 1995d). This monograph was a report on the fifty stomatopod species collected by Serène in the 1950s and was accompanied by 38 coloured plates together with more than 100 line drawings, plus a large array of photo figures. He included in the publication keys to all families and genera of stomatopods from the Indo-West Pacific as well as to all Indo-West Pacific species of genera represented in Vietnamese waters. Taxonomists and ecologists appreciated these valuable additions.

The second long term project concerned the journal kept by William Stimpson during the North Pacific Exploring Expedition. This was a joint project that was finally completed after Ray's death, with Rafael Lemaitre seeing this venture through together with Ron Vasile of the Chicago Academy of Science (see Vasile, Manning and Lemaitre, 2005). Stimpson was a hero to Ray because he was one of the great early American naturalists (see Manning, 1993k). Ray had planned to prepare a ''finders guide'' to the nearly 700 species of decapods reported on or described by Stimpson. Although most of the material studied by Stimpson was destroyed in the great Chicago fire of 1871 (see Deiss and Manning, 1981j), Stimpson exchanged specimens with many museums around the world. Ray found 100 of Stimpson's species at Copenhagen, including types (see Manning and Reed, 2006). This project was never completed and perhaps should be continued because Stimpson type material was also found in the Natural History Museum, London (see Evans, 1967)

The National Collection

From the beginning of his career in Washington, Ray was totally dedicated to the crustacean collections deposited in the Smithsonian Institution. He helped plan and took part in the move to the West Wing in 1965. During this move the entire decapod collection was rearranged including sometimes dispersing jars from one shelf in the old stacks to five different places in the new stacks. In 1991, Ray reported that the major part of the collection was housed in one room on about 6 miles of shelving and proudly wrote, ''… it is larger than all the collections I have seen in other museums combined.'' And this was undoubtedly accurate because Ray had by that time visited most of the major museums in the world to study their collections. The Smithsonian collection included around 15,000 lots of types and as a consequence it received heavy use. In the financial year 1990, 75 loans were shipped out of which half were of types. In the same year, the Crustacea section received 40 visitors of which about half worked on decapods.

Ray was involved with developing the initial data processing programme in 1965. Later in 1975 he started and designed a system to keep track of loans and to contact borrowers annually. Implementing his system required more than 200 letters to borrowers dating back to 1949 and resulted in a flood of material being returned to the Institution. Ray was also active in seeking funds through the Smithsonian Institution Short Term Visitors programme to bring in decapod workers to study the collection. Some sponsored included Helga Schiff, Rafa Lemaitre (with a Graduate Student Fellowship), Mary Wicksten, Alain Crosnier, and Gilberto Rodriquez to name only a few.

Through his research and fieldwork Ray amassed the finest and largest collection of stomatopod material in the world. In 1963, it was housed on less than 20 shelves whereas by the early 1990s it required more that 125 and included 90% of the known taxa of around 460 species. The collections of geryonid crabs grew too. Ray would increase these holdings by exchanges and direct request. For example when he received a request for his geryonid reprints, Ray would often solicit specimens from the originator of the letter. According to Ray the response was very good. Needless to say his fieldwork in Florida collecting callianassid shrimps with Darryl Felder and others (Fig. 3, upper right) further enhanced the collections and was the foundation of their generic revision.

Ray considered that the technicians in Crustacea were excellent, but although they were competent and professional there were too few to maintain the collection adequately. Ray believed that Smithsonian should develop a cooperative education programme including grant support substantial enough to provide technical help and training as well as a pool of candidates for future curatorial positions. He also wanted a number of permanent curatorial posts allocated for the future so that at least the Museum would have trainees to help with the maintenance of the collection. Furthermore, Ray wanted to bring basic record keeping into the twentieth century by computerising it and entering all catalogued and identified material into a useable database (see Manning 1969e, 1969g, 1983c). With both these important issues, he was ahead of his time. Moreover, in many institutions worldwide today permanent positions for curatorial staff remains an outstanding issue. Basically, Ray was a committed advocate for alpha taxonomy and natural history museums (see Manning, 1991c)

Collecting

Ray was an avid collector and used many innovative techniques for sampling specimens including nets, trawls, and yabby-pumps. He even published on the subject of collecting techniques (see Manning, 1960; 1975e; 1986e; Manning and Reaka, 1989). If you were fortunate enough to go collecting with Ray, he would always remark at sometime while in the field, ''Are we having fun yet?'' Ray always enjoyed fieldwork (Fig. 3, lower left). Fieldwork is essential, extremely hard work, but great fun. He was a committed enthusiast, so much so that if ever there were such a position as the patron saint of collecting he could have applied for the job. The only other contender for the post would have been Lipke Holthuis! In addition to making specific collections for his own research, Ray succeeded in making general collections for the Department while in the field. Among these major additions were 5000 plus invertebrates from

Fig. 3. Ray Manning, the middle years. Upper Left, Ray and his collecting assistant Jeddi, Tunisia, June 1973; Upper Right, Ray and Jan Walker, Indian River Lagoon, Fort Pierce, Florida, 1995; Lower Left, Ray and Keiji Baba, at Iles Chausey, Normandy, France, August, 1996; Lower Right, Lilly and Ray at the deep sea conference, Brest, 1988.

Ascension Island in 1971, besides some 28,000 crustaceans more than 10,000 other invertebrates from Tunisia, and more than 5000 invertebrates from off Sicily. Furthermore, as Chair he secured funding for a major collecting program in Panama by departmental staff. As Rafa Lemaitre noted in his address at Ray's memorial service in Washington, "Ray was a tireless collector; he amassed more than 50,000 decapods and stomatopods for the Museum and other institutions." Ray collected in localities such as St. John, Virgin Islands; La Parguera, Puerto Rico; Gulf of Guinea aboard R/V "Pillsbury";

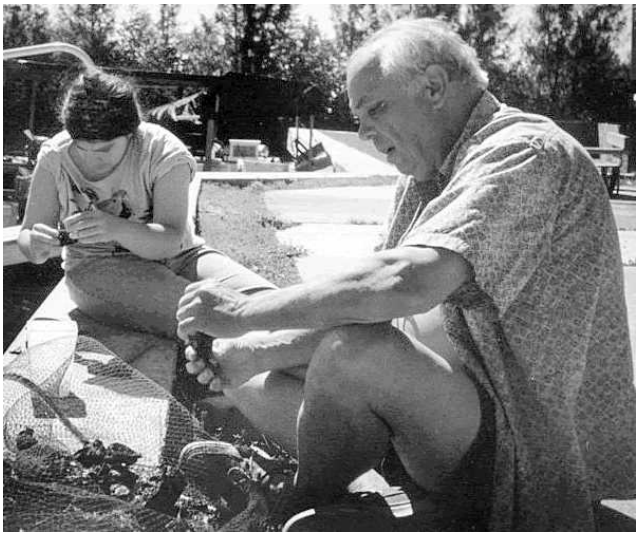

Fig. 4. Ray and his assistant, Karen Reed, shucking oysters for pinnotherid crabs, Smithsonian Harbor Branch Lab., Fort Pierce, Florida, around 1994.

Dominica including a week on R/V ''Oregon''; Karachi, southern Caribbean aboard R/V ''Pillsbury''; Bermuda, Panama; Ascension; Yugoslavia; Algeria; Sicily; Mediterranean coast of Spain; Atlantic coast of Morocco; Cuba; southern Sinai, Red Sea; Carrie Bow Bay; Okinawa; Atlantic coast of France and Plymouth, England.

Incidentally, Ray was jailed for one day in Algeria (Manning, NMNH personal file). His crime was being in a car with a woman who was not related to him (Lilly and Ray, personal communication). To make matters much worse, they had both been collecting together and the lady was wearing a bathing costume!

Ray enjoyed working at Smithsonian's marine laboratory in Florida at Fort Pierce; it was a happy hunting ground (Fig. 4). He collected intertidally using the many techniques that had been refined over many years of experience. These expeditions to the sunshine state paid off handsomely because Ray described many new decapods to the American fauna, and he was always grateful for the excellent support he received from the Smithsonian Marine Station at Fort Pierce.

Tunisia

Ray, Lilly, and their three daughters; Marian, Barbara, and Elaine packed their bags and left Washington to take up residence in Tunisia for two years from June 1972 to June 1974.

The United States had a government programme in Tunisia that paid for American scientists to visit the country. This fund contributed to the establishment there of the Mediterranean Marine Sorting Centre and paid the salary of local technicians to staff the facility. The money also allowed for the expenses of guest scientists from countries other than the US to visit Tunisia. Ray had just completed his term as Chair of the Invertebrate Department and wanted to get away from museum bureaucracy and therefore began to plan for a lengthy period abroad.

Fig. 5. Ray walking through the forest of inverted callianassid burrows. According to Darryl Felder this cartoon ''represented less than 1/10 the actual density of *Callichirus* burrows that we were dealing with in the paper presented, but the lengths are to scale.'' Cartoon sketched by and reproduced with the permission of Darryl Felder.

At first Ray considered working at the Smithsonian Tropical Research Institute, Panama for a year and then moving onto Tunisia for the second. For whatever reasons this arrangement did not work out so Ray and Lilly discussed moving to the North African Coast for two years. At work Ray started looking for supporting letters. However, this was not straight forward because Fenner Chace stated that he could not write such a letter of recommendation because he believed Ray would do better to stay at home in Washington and continue with his research.

In hindsight, it is now known that Ray made the correct decision and never regretted a moment that he and his family spent on the Mediterranean Coast. It was a wonderful experience for all concerned. The whole Manning family thought it would be a great adventure. Marian was already learning French at Junior High, and Ray was more or less a fluent speaker since his childhood days in Haiti. Upon arrival in what for them was a new world they stayed at an old Tunisian Hotel in La Marsa. The wife of the hotel owner worked at the Sorting Centre. The Manning's soon found an empty house to rent in Gamarth. It was large, but still did not have enough room for the girls and their tutors, plus Ray and his scientific colleagues. Furthermore, the rental was slightly outside the budget of the family. There was no electricity downstairs in this beautiful house, and there was a minor disaster upstairs when the fuse box blew in such a strange way that they received free electricity. Although reported to the authorities, nothing was ever repaired since the authorities had proclaimed that such a mishap was impossible.

In the fall of 1972, Ray was one of the delegates of the first CCDM (Colloquium Crustacea Decapoda Mediterranea) conference, which was held in Rovine, Yugoslavia and organised by Zdravko Števčić. While Ray was away Lilly found another house right next to the sea in nearby Port Punique, so when Ray returned they moved house. This place

too had electrical problems because the family wanted to run a washing machine, fridge and freezer, and many other American luxury electrical items as well as supply power to a laboratory that Ray planned to install downstairs. So, Ray had the wiring system upgraded. This was the smart end of town as Lilly puts it because in the house diagonally opposite General (later Field Marshal) Rommel had once lived during his expedition to the same coastline during WW II.

The girls were now enrolled in school; the two youngest were going to the American School while Marian attended the French Lycée. Ray purchased a small run-about jeep together with a sailboat that was hand built by a British family, who wanted to sell it to a good home because they were leaving Africa. Ray and the girls would sail this boat in the sea outside their home.

During the warm months Ray would work in the Sorting Laboratory, but in winter he worked at home because the Institute was without heating. Ray had a good assistant who lived locally, named Jeddi (Fig. 3, upper left). It was Jeddi who came to Ray's rescue when he was jailed in Algeria. He too had been on the same collecting trip and suggested to the police that jailing a top American Scientist could have serious implications for all concerned. After giving some thought to the matter, Ray was released in the late afternoon and a major diplomatic incident was averted.

Ray invited many scientists to visit him in Tunisia, including Lipke Holthuis, Ray and Eileen Ingle from London, and newly made friend Carlo Froglia. All remember their visit and have fond memories of working with Ray and Lilly. Among Ray's later acquisitions was a zodiac rubber boat that belonged to the Sorting Centre and a small dhow. The dhow had a minor problem in that the engine was out of alignment. This was only fixed when Ray happened across some qualified Italian motor mechanics. In no time at all Ray was off the coast casting his nets over a much wider area. In all, he was to make over 300 separate collections in the region during his two-year stay – a remarkable achievement.

Societies

During a crustacean meeting at Beaufort in October 1979, several colleagues including Ray discussed the formation of a formal society dedicated solely for those interested in Crustacea. From then until the end of his tenure as President in 1984, Ray spearheaded The Crustacean Society, first as chair of the Organising Council, then as President for three years. He handled the writing, printing, mailing of promotional materials, and organised all meetings during this period. By 1981, the first year of publication of the Journal of Crustacean Biology, Ray had raised around $25,000 to support the journal by persuading 450 Charter Members to pay dues in 1980 without receiving copy until the following year. Around 1991, Ray began to develop the membership and journal subscription further.

In May of 1999, The Crustacean Society honored Ray with its "Excellence in Research Award" in recognition of the quality and impact of his many contributions published over four decades, and the critical role he played in the founding of TCS and its early development during his tenure as President (1981-1983). A special volume of the Journal of Crustacean Biology was dedicated to him, containing papers by many of his colleagues (see JCB 2000 vol. 20, spec. 2).

Today the membership stands at about 650. This year (2009) JCB is publishing volume 29 and recently changed its format to A4. Moreover, from its initial beginnings as a predominantly North American society it is now truly international with the first non-American, Jens Høeg, being elected to serve as President in 2000/2001. This is how Ray would have wanted The Crustacean Society to develop, and it remains a fitting legacy to his memory.

Ray was also a founding member of the American Association for Zoological Nomenclature, which was formed by colleagues at the Museum in Washington. Its purpose, Ray records, was to raise funds in the US for the International Commission on Zoological Nomenclature. As Secretary-Treasurer he was responsible for all promotional activities, financial matters, sales of the Code and Official List in the U.S., and a number of newsletters. His aim was to build the membership to a level that would sustain an annual contribution of $10,000 to the Commission. Needless to say he reached this goal. Since 1983 and up until 1991 the AAZN had donated $55,000 to the commission.

Not surprisingly Ray was the first American to be elected (1985) a member to the Trust of the International Commission on Zoological Nomenclature. The Trust is the body responsible for the finances and management of ICZN. The National Museum of Natural History covered Ray's expenses to participate in the Annual General Meeting of the Trust and this gave Ray the opportunity to examine material in the European museums each summer. The then President of the Trust, Harry B. Whittington asked Ray if he would be willing to serve on the ICZN Board of Management. However the then-existing British hierarchy did not approve of this appointment. How short sighted they were!

Order of the Lobster

Ray was awarded the Smithsonian Order of the Lobster (without paper). The citation for this prestigious award reads:

> "Traditionally, curators at the Smithsonian Institution have been either tranquil sedentary workers content to study specimens sent to them by others, or less stable workers preferring to travel far and wide to make their own collections. The recipient of the present Award belongs to the latter group. For him no country is too distant or inaccessible to visit, provided that its restaurants have a 4-star rating in the Michelin Guide. To curators in museums all over the world and to major-domos of the world's finest restaurants, the recipient's fame as a carcinologist and gourmet has become legendary. He has pilfered pâté from the royalty of the scientific world and has sat upon their thrones (until becoming addicted to Kaopectate). We applaud this career devoted to life, liberty, haute cuisine, and the pursuit of Crustacea (both alive and broiled with drawn butter).
>
> "Collecting involves more than fighting the elements and losing cameras. It is not enduring the tropical sun in

the middle of winter, getting sand in one's shoes on the beaches of Bermuda, but also leaving Naples when the oysters are in season, or Paris when truffles are teeming. Obtaining licenses and liquor permits, translating foreign language menus, and tracking down genuine sturgeon caviar are everyday challenges that have been successfully met by our recipient.

''The specific action for which the 3rd SOL Award without Paper is conferred to Dr. Raymond Manning is collecting aquatic avifauna on Chesapeake Bay from the recipient's private vessel, equipped with an outboard motor and a shotgun, for which he achieved from the state of Virginia a fine of $300.00. The SOL Committee commends Dr Manning's blemished record.

''In addition the lobster claw, the time-honored symbol of the SOL Award, the Committee had planned to present, as a memento of this occasion, a rubber duck, or as it is affectionately called in the sidewalk cafés of the Champs Elysées, 'le canard de caoutchouc.' However, the rubber duck is now, at the insistence of Bill Hart, on the endangered species list, hence we are substituting 'le poule de caoutchouc.' Bon appetite!''

Ray was made a Fellow in 1974.

Personal Testimonials

What follows now is a series of reminiscences about Raymand Manning from a few of his many colleagues. These are meant to enhance the above biography and provide a better insight into Ray.

Lipke Holthuis

Actually my first contact with Ray was by correspondence and dates from December 1957; it concerned Stomatopoda. I first met him personally when I visited Miami in September 1960, during my third stay with the U.S. National Museum. I joined Ted Bayer and his group, who went to Florida to get ideas and make sketches for a coral exhibit to be placed in the National Museum. At the Marine Laboratory I met Ray and Tony Provenzano, who both studied at the University of Miami, and Enrique Boschi, who had come from Argentina. The visit was memorable also because at the same time the hurricane ''Donna'' visited southern Florida. We were immediately put to work to make the Marine Laboratory safe from the hurricane, putting as much stuff as possible on the upper floors and securing the collections. Fortunately the hurricane followed the west coast of Florida, and damage done to Miami, although considerable, still was not as bad as expected. A few days later we went to the west coast and did a lot of collecting. In these peculiar circumstances Ray was a tower of strength.

Later, when Ray got his job at the USNM, our correspondence became more frequent. And during my visits to Washington, I saw much more of him and his delightful family, where I often stayed. His pleasant character and his sense of humour made him a wonderful colleague; he was always ready to help and had excellent suggestions. He took the time to listen to your problems, without neglecting his regular duties. I remember that when he got the temporary job of head of Zoology, many older colleagues were doubtful whether he could manage that. Seemingly without giving less attention to his own division, his research and his spare time, he managed splendidly and seemingly effortlessly, as also the old sceptics had to admit (and did).

During the 1964-1965 West African ''J.E. Pillsbury'' cruses, he and I decided that it might be worthwhile to study the crabs and make a short paper on them. This seemed the more easy as there was the excellent monograph of the West African crabs by Th. Monod. At the end of the second cruise we made a preliminary list of the crabs that we had collected and placed behind most names the letter ''NP'' (No Problem), as we expected that their study would be rather easy. But, as usual, lots of problems did turn up and it took us 12 years to finish our brachyuran report. That we did finish, I think, came by the method we used. Ray would come over to Leiden and then could work continuously on the job without being disturbed by phone calls or correspondence etc. This forced me also to give much more time to the project than I otherwise would have done. And after some time we would change our roles and I came to Washington for it. This worked fine. Lilly Manning made excellent illustrations and cheered us up.

In October 1974, Ray joined an excursion of the Crustacean section of Leiden Museum to Spain and Morocco. Messers J. A. G. Delfos and I. J. Smit, both technicians of the section, and Mr J. Immink, the carpenter of the Museum, who was our excellent chauffeur, made out the rest of the group. Ray's presence made the atmosphere in the group very happy, and he worked as hard as the rest of us. He was always positive, even when there were some set-backs, like our arrival by boat in Tangiers and finding the customs office closed for Ramadan, not only for the day, but also for the following weekend; or arriving in Rabat and finding all the hotels full because of an Arabian top-conference there. He never got excited and helped finding solutions. The trip became most successful and Mr. Smit and I, the only participants still alive, often reminisce about that wonderful time.

As to the scientific work, like myself, he started with the study of stomatopods, the taxonomy of which was placed by him on a new footing. He wrote an excellent revision of the West Atlantic Stomatopoda as well as of those of West Africa and the Indo-West Pacific. He is rightfully considered the best ever specialist of the group. Practically all of his new genera (and there are many) are at present accepted, although in the beginning some older specialists were somewhat doubtful about the work of ''that young splitter.'' The name of a new stomatopod that I once described, *Manningia amabilis*, was not only so named because the species lacked a spine at the rostrum, but also because the species name seemed appropriate for the person to whom the generic name was dedicated. Also the groups that he later gave his attention, like Callianassidae, Geryonidae, and Pinnotheridae, greatly benefited from his work.

The short time I stayed with Ray and Lilly in Tunis was most enjoyable. I was surprised to see how well both adapted to the new circumstances, and solved problems in a way that one later could laugh about. Ray's French was quite good and he even telephoned in French. Lilly soon

got used to the new language, although she sometimes confused matches (alumettes) with skylarks (alouettes).

Ray Ingle

As far as I recall my first contact with Ray Manning was in the 1960s when he wrote querying my identifications in a published paper reporting the stomatopod *Squilla alba* from St Helena and South Africa (Ingle, 1958). His concern was that both records were far beyond the previous known locality for this species – the Bahamas. However, during his first visit to the Natural History Museum, London to study our stomatopod collection it was reassuring to learn that he found that my identifications were indeed correct. From this first meeting, and during those throughout the years that followed, we developed an empathy that soon led to a firm friendship.

In late 1971, Ray outlined to me a proposed program for detailed taxonomic studies of the decapods of the Tunisian region, and it pleased me to write to him supporting this project. In late 1973, I accepted his invitation for both Eileen (my wife) and myself to participate in this study as guest research workers under the U.S. Government program. I knew that this would be probably the only opportunity to enhance the museum's (NHM) collection of decapods from this region that at the time were poorly represented.

We arrived in Tunisia in February 1974, and I remember that it was very late in the afternoon of that first day before we finished unpacking and sorting photographic gear and other equipment needed for recording colours of decapods. We were given use of the improvised laboratory in the basement of an imposing house the Manning's had recently rented near Port Punique. After a brief ''happy hour,'' we were taken for a sumptuous meal and then to the American Cinema to see ''The Day of the Jackal.'' I soon realised that it was not an easy time for Americans working in Tunisia or for those recognised as American associates. Previous to our arrival, I had sent collecting equipment to Tunisia to be delivered to the Mediterranean Marine Sorting Centre. However, when we arrived Ray told me that Customs Officials had impounded it and that we would need to get the necessary documents signed by the Sorting Centre's Director before the equipment could be released. During the one and only meeting with the Director it became apparent that she did not entirely approve my collecting *their* fauna and flora for any Museum other than their own. Despite Ray's persistent requests my equipment was released from Customs only on the day before our departure to the UK. Nevertheless, Ray was able to arrange eventually for the substantial collection of decapods made for the Natural History Museum to be sent to London *via* the USA!

For offshore collecting Ray had acquired a small dhow with a somewhat temperamental engine. Using this boat and a small trawl we made numerous collections of decapods. There were, however, some reservations about trawling. Jeddi (Ray's Tunisian assistant at the Marine Sorting Centre) strongly advised us not to trawl near the President's Palace and also to avoid, at all costs, fishermen's drift nets. Sometimes Eileen accompanied us and helped to provisionally sort the trawl catch, carefully putting aside those decapods we wanted alive for recording on film in the laboratory. On one occasion when we were sorting the catch we had not realised that the dhow had drifted perilously near the offshore waters of the President's Palace, and we were soon reminded of our situation when a fast moving Tunisian naval surveillance boat passed so close to us creating a considerable wash that nearly capsized the dhow! During another trawl our engine died just as we reached the trawling grounds. I diagnosed the problem as overheating. I had never shared Ray's confidence about that engine! Fortunately I always took my snorkel, mask and fins when we went trawling in the hope of collecting decapods in the more shallow inshore regions when the opportunity arose. On that occasion the gear was put to good use. I spent an hour or more repeatedly diving beneath the boat removing the brass strainers and cleaning out the water inlets that were choked with fragmented seaweed. Climbing back on board somewhat exhausted I was greeted with Ray's characteristic quip, ''Did you have fun?'' Needless to say we soon got the engine started and all was well.

I well remember that Ray was a skilled operator with the 'Yabby Pump' (Manning, 1975e) and highly successful in collecting mud shrimps. As our visit was drawing to its close I was desperate to obtain ovigerous females of the Mediterranean shore crab [*Carcinus mediterraneus* (now *aestuarii*)]. On the penultimate day of our visit Eileen decided to have a go with the Yabby pump, and her first attempt captured a small ovigerous female of this species. Ray and I said this was beginners luck of course. We didn't find any more.

Ray was generous in providing holding aquariums and space for us in his small basement laboratory, and we were able to photographic living specimens of the many decapods collected and to keep alive ovigerous spider crabs, *Macropodia rostrata* (Linnaeus), and the one ovigerous shore crab, *Carcinus aestuarii* Nardo. Thanks to Ray's help in providing suitable containers, these live crabs were successfully transported to the Natural History Museum and later their larvae reared and described (Rice and Ingle,1975; Ingle, 1982).

During our several visits to the USA to study decapods in the collections of National Museum of Natural History, Washington, Ray and Lilly always welcomed us into their home. During the 1975 visit, I expressed the wish to improve the study collections of the Natural History Museum, London by making a collection of American crayfishes. It was Ray who then introduced me to Horton Hobbs who organised a highly productive collecting trip during which we were able to capture many species of cambarid crayfishes. Again, Ray took it upon himself to arrange the dispatch of this collection on my behalf to London.

Over the following years Ray and Lilly made several visits to the UK and often stayed with us. We were able to repay their previous hospitality with a few collecting trips to parts of the British south coast. The last of these, in 1989, was a visit to the Kingsbridge Estuary, Devon where Ray wanted to collect specimens of *Upogebia deltaura* from Leach's type locality. The astonished holiday makers witnessed many days of both of us hard at work ''Yabby pumping'' long areas of the estuarine beach.

We last met Ray at the Liege Conference in 1996. Although he was still recovering from an operation for lung

cancer and a stroke during the previous summer (personal correspondence from Marion Manning, December1996) he made light of his illness, radiated his usual optimism and subtle innocent mischievous humour, and enjoyed discussing with me his recent work on geryonid crabs.

The demise of two great polymaths of carcinology, Ray Manning and recently his colleague Lipke Holthuis both of whom throughout the last five decades have contributed so much to crustacean taxonomy has left a gap that will be surely difficult to fill.

David L. Pawson

I came to this museum from New Zealand in 1964, and Ray and Lilly took my wife Mary and me under their wing, introducing us to bourbon and ginger ale, driving station wagons in the deep snow (one of Ray's favorite winter pastimes), and playing bridge. During our first couple of years here, we were at the Mannings' house scores of times – always great fun, and a welcome change from our cramped apartment. We spent several Christmases, Thanksgivings, and other holidays together as well, and we were always grateful to Ray, Lilly, and their girls for their friendship and generosity at a time when we were becoming adjusted to a new home and new life.

In 1971, I followed Ray as Chairman of Invertebrate Zoology, and was happy to inherit not only Ray's improved budget, but also his great Visiting Curator idea. We had a vacancy in the Department and, instead of hiring a permanent curator, we used the vacancy, starting sometime after 1971, to bring distinguished scientists here for longer periods of time, among them Lipke Holthuis. Frederick M. Bayer was our last Visiting Curator in 1975; we made him a permanent curator, not wanting to lose him again!

Over the years I was in the field quite a lot with Ray – several times we went to Panama, along with Meredith Jones, Joseph Rosewater, Roland Brown from this Department, and Charles Dawson from Mississippi. We collected in shallow water on both sides of the isthmus, all this in preparation for a proposed sea-level canal, an idea which died in the 1970s. Then in 1976 Jones, Rosewater, Anthony Provenzano, and I accompanied Ray to Ascension Island for two weeks of wonderful collecting. When Ray and his family were in Tunisia for two years in the early 1970s, Rosewater, Jones, Clyde Roper, and I spent a week with Ray and Lilly, and family at their mansion in Carthage, on the shores of the Punic port, and we had a grand time, as usual. On all of the field trips Ray was his usual energetic self, good-humored, optimistic, and hard working. We collected all day and seemed to play poker and other card games all night.

Ray's dedication to his science was obvious and enviable. He fiercely pursued his research. I remember, sometime in the 1960s probably, Ray sticking his head in my door and saying, ''I just published my 100th paper.'' At the time I thought that I was close to my 100th, and I'm keeping up with Ray. Not a chance! It seemed like only 24 h later when he announced the birth of his 200th paper! The one-sided race was over before it began.

His dedication to what he thought was right was also enviable. He was renowned for his blistering memos, which he would fire off to higher administrative levels in the Smithsonian. Sometimes these 'whiffs of grapeshot' didn't work to his benefit, but sometimes he was able to right a perceived wrong.

Of course it was very sad to see Ray's steady decline during his final illness, and uplifting to see him still going at his research. I'll never forget my feelings of loss on the morning when Brian Kensley came and told me that Ray had died. I'll always regret missing Ray's memorial service. The date had to be changed at the last minute because of a snowstorm, and on the new date I was out of the country, and could not change my travel plans. Rafa read my brief tribute to Ray. In it, I think I mentioned a couple of incidents that will always be in my mind's eye, and both occurred at Ascension Island.

First, we were snorkeling at English Bay on 12 July 1976. I was sitting on some intertidal rocks, resting and daydreaming, when suddenly Ray's head and shoulders came bursting out of the water about ten feet away. He yelled, ''Are you interested in these,'' and in his raised right hand he held three brown sea cucumbers – all about 6 inches long. These three sea cucumbers became the holotype and paratypes of the distinctive new species *Holothuria manningi* Pawson, 1978.

Second, on 13 July 1976, we were at Shelly Beach at the splash pools, the habitat of the famous *Procaris ascensionis* and *Typhlatya rogersi*. After doing some intertidal collecting in the hot sun, we were sitting in the shade of some rocks by the *Procaris* pool, probably suffering from mild hangovers as well. We noticed that in the pool there were three young mangroves, stalks about three feet high, all in a perfectly straight line a couple of feet apart. We suspected that these young mangroves would thrive where they were, grow into large trees, and transform the habitat, perhaps threatening the very existence of P*rocaris*. We knew that no mangroves had previously been reported from Ascension. Perhaps these mangroves had been introduced by one of the many aquarium fanatics stationed at Ascension? Perhaps this explained their arrangement in a nice straight line? After some discussion, during which Ray no doubt made powerful arguments in support of *Procaris*, we convinced ourselves that these mangroves had indeed been introduced by well-meaning humans. We all entered the pool (partners in crime?), uprooted the mangroves, and put them on high ground, where they would not survive. Perhaps we altered, forever, the shoreline ecology of Ascension?

I loved and admired Ray Manning.

Frederick Schram

I first met Ray Manning as a graduate student in 1967. After a long summer at Woods Hole working on living crustaceans, I went down to the National Museum to look at the fossils. My initial contact was with Henry Roberts, one of the truly great sources of crustacean lore and who had an office full of fossils, and he introduced me to the rest of the crustacean staff – and very extensive it was in those days. My central interest at the time was fossil hoplocaridans, so meeting Ray was a special treat for me. I always thought of Ray as much older than he was, mainly because he exuded an air of ease, calm, and confidence that one often associates with someone who has been around a while

and has accumulated a fair share of wisdom and experience. Only years later was I surprised to realize Ray was only 33 back in 1967.

We continued corresponding and exchanging reprints, but our next serious contact occurred beginning in 1978 at the American Society of Zoologists meeting in Richmond, Virginia. That meeting was the culmination of several years of informal discussions and formed the beginning of the movement to set up The Crustacean Society. At the time, there was a social association of carcinologists called Crustacean Club that met every year at the ASZ gathering. The main motivation for establishing a formal society was to sponsor a journal. In those days Crustaceana was the only journal in the field, and the backlog there from acceptance to publication was running around two years. It was also a very expensive journal; one could only find it in subscribing libraries. Even so, there was some resistance from Crustacean Club members, who were concerned that the fellowship of Crustacean Club would disappear. Ray was the main spokesman for the idea of a society. In the discussions, he calmly assured everyone that the installation of a club and a society need not exclude each other. A committee to study the idea of a society and poll the entire CC membership was formed at that gathering with the charge to report back at the next meeting of ASZ; Ray of course was the chair of that committee.

That was the beginning of what became the Organizing Council of The Crustacean Society. Ray was our leader. The council also included people like Darryl Felder, Bob Gore, Horton Hobbs III, Les Watling, Adrian Wenner, Tom Wolcott, and myself. All through the formation process, Ray expressed that air of calm and confidence I had seen many years before. There was no crisis that seemed to bother him; his innate optimism and good spirits carried us through all the difficulties. Those early years were not without problems either. At a couple of points we were almost bankrupt. But Ray took it all in stride, assumed jobs and tasks (to the detriment of his own museum work) that needed to be done, found and invited new people onto the team to carry on where others left off. We affectionately referred to Ray as our ayatollah.

Ray loved being with people; he liked nothing better than to share a drink and a meal with friends. He and Lilly were great hosts. In 1995, we were in Washington for the ASZ meeting. Brian and I were staying on for a few days before returning to Amsterdam, so Ray and Lilly invited us to the New Years Day champagne brunch at the Cosmos Club. This is a grand affair with the buffet of food laid out in several rooms. Chris Tudge joined us, and as the champagne flowed the conversation was lively and the selection of food remarkable. When the time for deserts arrived, Brian and I joined Ray for a stroll to the desert room. A remarkable mountain of choices was laid out, and we all dithered over what to pick. Ray seemed especially vexed, but he suddenly went back to the main buffet room and returned with a mountain of bacon on a plate. ''What I really want,'' he said, ''is another serving of this wonderful bacon.'' Then he paused, looked over the desert spread, eyed the bowl of whipped cream, and proceeded to put a big dollop over his bacon. Knowing of his heart problems, we were aghast. ''Ray, do you think that's wise?'' ''Yes, I know, I know. But it's New Year, and I can diet tomorrow.'' Back at the table, Lilly stared at the concoction but never said a word.

In 1999, at the summer meeting of TCS organized by Darryl Felder in Lafayette, Louisiana, there was a grand celebration of Ray and his career. We all knew of the precarious nature of Ray's health. The turnout at that gathering was overwhelming; people came from all over the world; everyone wanted to celebrate Ray. He had to husband his energies with rest in between sessions and meetings, but at the reception and banquet in his honor he was in grand form. His remarks that evening were classic Ray Manning – gracious, good spirited, positive, upbeat. I'll never forget his closing comment. ''Before I sit back down, I just want you all to remember this. You are all here tonight – [a pause] because of me!'' It took a second to sink in, but the room erupted in applause and cheers. Indeed, we ***were*** all there because of Ray – not only to celebrate the man whom we knew we would soon lose, but also because of The Crustacean Society and the Journal of Crustacean Biology that he had guided through their foundation and establishment.

Ray left a great legacy.

Carlo Froglia

I met Ray Manning for the first time at the inaugural Colloquium Crustacea Decapoda Mediterranea organized in Rovinj by Zdravko Števčić in September 1972. I had just started to work on Mediterranean decapods at the Ancona Fishery Institute, and he was already the world authority on stomatopods. We soon discovered that we both enjoyed fieldwork and had a common interest in experimenting with collecting gear to adequately sample diverse habitats. A few months later Ray invited me to Tunisia where he had moved with the family from Washington in June 1972 for a couple of years sabbatical leave to work on decapods.

I spent three weeks in Tunisia during June 1973 at his house in front of the ancient Port Punique. We used to go out in the morning in a small motorboat trawling with a shrimp try-net around the Gulf of Tunis or sampling along the shore with push-nets and a home made yubby-pump, and in the afternoon we would process the material collected. The warm hospitality of his whole family made this period unforgettable and that was the start of a long-lasting friendship.

I returned to my Institute with a substantial collection of Tunisian coastal decapods and full of enthusiasm. During the following spring I was able to organize a fishing cruise around Sicilia in the research vessel of my Institute; the ''Luiciotta.'' Ray joined the vessel in Palermo and for two weeks we worked like horses, trawling down to 600 m off Western Sicily and in the Sicilian channel, and dredging in shallow waters any time the weather conditions forced us to take shelter near the coast.

The rich collection of decapods assembled was shared between us, and we decided to write a cruise report that soon became an informal project to study the Central Mediterranean decapods fauna. As a consequence, in January 1975 I visited the Smithsonian Natural History Museum to work on our collection and again hosted in the

Manning's house, but this time in Virginia. After a day of hard work at the Museum it was typical to rest sitting in front of the fireplace talking about decapods, fishery and seafood. During this visit I discovered the therapeutic properties of bourbon whiskey with water and ice, and Ray discovered that small squid are not only a good bait for angling but are delicious when coated with olive oil and bread crumps, and grilled for few minutes.

Ray and his wife Lilly King returned to Italy in May 1979 to attend the 2nd Colloquium Crustacea Decapoda Mediterranea that I organized in Ancona. They also convinced my wife Maria Emilia Gramitto to ink my scientific drawings, and Lilly commenced training her in the fundamentals of illustrating. Both Lilly and Ray returned to Italy in 1985, and the four of us went to Western Sicily to make more shore collections. We had 'a lot of fun' collecting during the day and sampling good seafood and Italian wine late into the evening. Even if my many duties in the Ancona fishery Institute made me a ''part-time decapodologist,'' I returned several more times to Washington to added new sections to our manuscript, with revisions of some genera, nomenclature remarks based on critical reading of old literature, and additions of new records from the study of other collections received from colleagues. When Ray passed away, the manuscript on Central Mediterranean decapods and stomatopods was almost ready for the printer, but thereafter it gathered dust for years on my shelf, and only recently have I decided to reopen it with a view to publishing those sections that can still be of interest for Mediterranean carcinologists.

For many years, Ray's brightness and energy have been of great support any time I got discouraged, and his continuous readiness to supply literature or comparative material convinced me not to give up studying decapod crustaceans. The last time I saw Ray was at the summer meeting of The Crustacean Society in Lafayette in May 1999, when his career-long contribution to crustacean studies was recognized by the Society. I remember that in the speech at his honorary banquet he said, ''… if you are here tonight, that's because me.'' This was true for myself and many other honourable colleagues present; it was because of Ray that we were so successful with our carciniological studies.

Thank you Ray.

Darryl Felder

When truly committed to a career-long subject of interest and deep personal investment, one's drive evolves to the point that the greatest rewards are found in shared enthusiasm with selected peers. The Ray I knew was such a friend and colleague around whom I could be myself, knowing he would freely and frankly speak his mind in my presence, but that he would with no less interest listen carefully to what I had to say. That grew into a very satisfying long-term collaboration, one in which I could tap into the surprisingly youthful enthusiasm of an experienced senior colleague in systematics, when my own training had been primarily in physiology and ecology. Our working relationship developed over the course of many years during which I visited the USNM and was graciously granted food and lodging at the Manning home during my stay. It was built further upon our field collaborations based at the Smithsonian Ft. Pierce Marine Laboratory in Florida, the Smithsonian CCRE lab in Belize, and varied other field sites in which we shared an interest. I came to have the stronger back in the field and steadier hand in the lab, but Ray had insights into systematic questions and recall of literature that I could never approach. We shared social, culinary, sporting, family, and other interests over the years, well beyond what can or should be treated here.

The attrition among crustacean colleagues over the course of Ray's career at the USNM was of great concern to him and a common subject in our conversations. He was no less concerned about contemporary hires of museum scientists that he felt did not embrace museum-based work and thus undercut the very justification for a research program to be based at the USNM. ''Its all about species!'' Ray would proclaim; ''… if they would just focus on that'' was his repeated call, which he applied to some hires that he questioned the need for, some kinds of museum research programs that were funded, and management priorities of some administrators. Ray practiced an unapologetic species-level approach in his work. He was not necessarily disappointed with colleagues who abandoned alpha taxonomy for alternative foci in deep phylogeny, evolutionary processes, or other seemingly more esoteric topics, but he clearly objected to this taking place at the expense of urgently needed species-level studies … especially where it was promoted as a 'loftier goal' than species-level studies. He could be a skeptic of workers who would casually embrace cladistic or molecular phylogenetic methods, but only when it was evident to him that these practitioners were working without a good background understanding of the crustacean groups they targeted and thus undertaking naive approaches. He perceived an urgent need to compensate for the dwindling of crustacean systematists by bringing new specialists into training and involvement by whatever means were available to him. For this reason, and his genuine love of diverse cultures and personalities, he freely and enthusiastically recruited the involvement of collaborators, visitors, technicians, and students from throughout the world, be they experienced specialists or budding parasystematics.

Some of the work that appealed to Ray was not what one might expect, for example, the hunt for lost or misplaced materials among endless shelves and side-stashes at the museum. If anyone could find it, Ray could, and often did. His enthusiasm for such work drove his search for Stimpson's types, fueling a project well beyond his own museum's doors. He maintained a valuable historical perspective, to the point that he would try to ''think like Mary Rathbun,'' who was limited by lack of modern illumination and microscopy, and he repeatedly noted that ''she just had a damn good eye for species.'' He made quite the opposite observation about some other predecessors in his field. While an enthusiastic museum scientist, Ray did not limit his activity to that setting, and undertook a number of field expeditions over the course of his career. Even those that did not result in publications credited to him produced a wealth of material and served to keep him ''in touch with the animals and the limitations of sampling.'' However, for all his systematic fundamentalism, Ray was not afraid to try new things. He embraced word-processing

and computing tools early in their evolution, pushing for electronically submitted manuscripts and reviews. He was extremely fond of new gadgets, which likely explains his enthusiasm for everything from potato guns to new food preparation tools; if it caught his eye, Ray sometimes just had to have it. Even molecular genetics began to catch his eye just prior to his passing, and he enthusiastically supported the concept of a major decapod and stomatopod crustacean gene-sequencing project, even to the extent of including type specimens where possible.

Ray very much loved good food and drink, and it was hard to see him hold back with declining health. The lure of good cheese, bread, and wine – as much as the search for museum materials and the chance to commune with old friends throughout the region – brought him and Lilly repeatedly to Europe, be it for work in Paris and elsewhere, or to attend the Mediterranean Decapod meetings which he strongly supported. As for foods, however, Ray was not limited to ''highbrow.'' We shared pig tails and rice in Belize, fried turkeys in Louisiana, or Lilly's herring feast and his own hard rolls in Virginia. Following the Lafayette TCS meeting in May 1999, where Ray was honored for his career accomplishments, he left me a small gift of some good Kentucky bourbon that he had just discovered. Knob Creek has since gained relative popularity, but I nursed that bottle as a special treat over the months to come. Like all good things, it came to an appropriate good end the day I put the last of it over a few chunks of ice and retreated to the swing beneath a large oak in my backyard to contemplate the end of a long day, during a year that had been stressful on many fronts. I took the unexpected call as I sat there, having to accept that an exceptional colleague and dear friend had slipped away. The irony of timing did not register at first, but later brought a smile as I took the last sip and recalled the massive contributions of this man, the debt I owe him, and a sea of cherished memories that lie in his wake.

Karen Reed

One of my greatest joys was to have known Ray and worked with him at the Smithsonian Institution as his technician. I had been working in Invertebrate Zoology for several years and had just finished a curation and catalog project. I started making enquiries about a new assignment and someone suggested that I talked to Ray. He wanted some help curating his Tunisian collection, so in late 1992 I started work on Mediterranean decapods. Shortly after this, I started accompanying him on his collecting trips to Fort Pierce, Florida where the Smithsonian has a marine station. Over the years Ray included me, and many of the other NMNH support staff, in his funding for fieldwork to Florida. At the time I did not have any in-depth training on invertebrates, but Ray always found time to answer my questions on how to distinguish one crab or a shrimp from another. After a long, but enjoyable day in the field we would all sit around talking about food and drink, life as a child growing up in Haiti, or playing poker. Ray was a great communicator, and he was always having fun. He once taught me how to make a Haitian kite, which I still have in my office.

I attended several conferences abroad including Florence, and Amsterdam, and many more in the United States. This was thanks to Ray who somehow found funding for me to participate. He was such a giving man, and this was not just restricted to me. One time I remembered he asked me to help him with reviewing a paper. Ray was always telling me how much time it takes to review manuscripts and wanted me to look up some additional information. So I asked him why he accepted to comment upon the paper. He simply replied, ''Because they asked.'' This was typical of Ray. But that's not to say that he tolerated everything. For example, if you complained too much he would hand out a quarter and state, ''Here call some one who cares.'' Needless to say, I usually had enough loose change to get coffee at least once a week!

At the registration get together for fourth International Crustacean Congress in Amsterdam in 1998, many colleagues asked me how was Ray because at the time it was not clear if he would attend due to illness. When I informed people that he was here, they would politely ask one or two more questions and then make a beeline straight for Ray. It became evident to me that not only did Ray care for his colleagues and friends, but we all were extremely concerned and worried about him.

Curators like Ray are special.

Shane Ahyong

I am no doubt one of Ray's more recent friends and colleagues. Our first contact was through the post. While an undergraduate student in the early 1990s, I also volunteered at the Australian Museum pursuing a long-standing interest in stomatopods. Week by week, I worked through the unidentified stomatopod collections guided by Ray's revisionary publications. I came across an apparently unidentifiable species, which I suspected to be undescribed. But where to go from there? There was no email or Google in those days. So, I wrote Ray, with a brief description and figures, informing him of my possible discovery. He promptly replied, and not only confirmed the new species, but also, no doubt sensing my interest, enclosed a bunch of reprints and encouraged me to work up the new species. The rest, as they say, is history. From then on, we maintained a regular correspondence, discussing and debating stomatopods, right up to the end.

Ray was obviously on top of the game, and I was especially grateful for his continued encouragement to pursue the stomatopods. We first met in Washington in 1997 at the USNM, and it would be fair to say that I was in awe. Here I also met Lilly, who clearly was a pillar for Ray (as well as his red Ford Mustang muscle car). Ray was extremely generous with his time and resources, and had a way of giving sage advice very succinctly. He clearly looked beyond his own work and was deeply concerned for the future of taxonomy and collection-based research. I was impressed that he could always find time for students and colleagues, and still maintain an unusually high rate of output. So much so, that he occasionally lost track. I recall an amusing moment, while working together on a joint project, when Ray walked up with a jar in hand – ''Take a look at this, I think it's a new genus.'' I put the specimen under the scope and sure enough …, um, I sheepishly had to point out that he had just named it in his most recent monograph. ''Oh … right,'' he chuckled, and we carried on working.

Ray's taxonomic flair was remarkable. To be sure, his stomatopod expertise is well known, but few realize that some of his most important and far reaching revisions were those published between 1963 and 1969, at a time when the prevailing classification was extremely conservative, with fewer than 10 genera all contained in a single family, Squillidae. Within those years, however, Ray multiplied the families and genera by fourfold, reflecting either considerable recklessness or considerable insight. History speaks for itself, however, and most of the many taxa he described still stand today. The current stomatopod classification of 100 plus genera and 17 families has been largely built on the foundation laid four decades ago by Ray.

It was a great sadness and surprise to learn of Ray's passing for we had only corresponded the week prior. When I came to the USNM in 2000, in part to help 'tidy-up' after Ray, it was a strange time. To be among colleagues and in the collection again was of course a delight, but sorting and working through Ray's materials and correspondence, still sitting on his desk, was not easy to do. It was difficult not to walk into his office and expect him to still be there, with some quip or ready remark.

He was much missed then, and I miss him still.

Acknowledgements

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Taxa Erected by or with Raymond Manning

Astacidea

Genus
Nephropides Manning, 1969h

Species
Nephropides caribaeus Manning, 1969h
Eunephrops luckhursti Manning, 1997e

Anomura

Species
Clibanarius rosewateri Manning and Chace, 1990j
Hippa carcineutes Holthuis and Manning, 1970f

Caridea

Suprageneric taxa
Procaridoidea Chace and Manning, 1972f
Procarididae Chace and Manning, 1972f
Agostocaridae Hart and Manning, 1986l

Genera
Ambidexter Manning and Chace, 1971b
Agostocaris Hart and Manning, 1986l
Fenneralpheus Felder and Manning, 1986m
Procaris Chace and Manning, 1972f
Somersiella Hart and Manning, 1981h

Species
Agostocaris williamsi Hart and Manning, 1986l
Ambidexter symmetricus Manning and Chace, 1971b
Bythocaris cryonesus Bowman and Manning, 1973a
Fenneralpheus chacei Felder and Manning, 1986m
Gnathophyllum ascensione Manning and Chace, 1990j
Gnathophyllum circellum Manning, 1963a
Microprosthema inornatum Manning and Chace, 1990j
Nikoides schmitti Manning and Chace, 1971b
Odontozona anaphorae Manning and Chace, 1990j
Paranchistus liui Li, Bruce and Manning, 2003b
Periclimenes chacei Li, Bruce and Manning, 2003b
Procaris ascensionis Chace and Manning, 1972f
Procaris chacei Hart and Manning, 1986l
Processa famelica Manning and Hart, 1991a
Processa fimbriata Manning and Chace, 1971b
Processa hemphilli Manning and Chace, 1971b
Processa packeri Manning and Chace, 1990j
Processa profunda Manning and Chace, 1971b
Processa riveroi Manning and Chace, 1971b
Processa tenuipes Manning and Chace, 1971b
Processa vicina Manning and Chace, 1971b
Processa vossi Manning, 1992a
Salmoneus calvicola Felder and Manning, 1986m

Salmoneus setosus Manning and Chace, 1990j
Salmoneus teres Manning and Chace, 1990j
Somersiella sterreri Hart and Manning, 1981h
Typhlatya iliffei Hart and Manning, 1981h
Typhlatya rogersi Chace and Manning, 1972f
Typton ascensionis Manning and Chace, 1990j

Brachyura

Genera
Abyssotheres Manning and Galil, 2000a
Afropinnotheres Manning, 1993j
Alain Manning, 1998d
Alainotheres Manning, 1993j
Arcotheres Manning, 1993j
Austinixa Heard and Manning, 1997h
Buergeres Ng and Manning, 2003b
Calabarium Manning and Holthuis, 1981a
Calypsachaeus Manning and Holthuis, 1981a
Capartiella Manning and Holthuis, 1981a
Cecidocarcinus Kropp and Manning, 1987e
Chaceon Manning and Holthuis, 1989a
Deiratonotus Manning and Holthuis, 1981a
Detocarcinus Kropp and Manning, 1987e
Ecphantor Manning and Holthuis, 1981a
Epulotheres Manning, 1993j
Ernestotheres Manning, 1993j
Heikea Holthuis and Manning, 1990c
Hexapinus Manning and Holthuis, 1981a
Holotheres Ng and Manning, 2003b
Hospitotheres Manning, 1993j
Ilyogynnis Manning and Holthuis, 1981a
Indopinnixa Manning and Morton, 1987d
Laleonectes Manning and Chace, 1990j
Lillyanella Manning and Holthuis, 1981a
Luciades Kropp and Manning, 1996a
Medorippe Manning and Holthuis, 1981a
Nannotheres Manning and Felder, 1996b
Nasima Manning, 1991d
Nepinnotheres Manning, 1993j
Opecarcinus Kropp and Manning, 1987e
Phyllodorippe Manning and Holthuis, 1981a
Sakaila Manning and Holthuis, 1981a
Sanquerus Manning, 1989f
Serenella Manning and Holthuis, 1981a
Sindheres Kazmi and Manning, 2003a
Spiroplax Manning and Holthuis, 1981a
Stevea Manning and Holthuis, 1981a
Telmatothrix Manning and Holthuis, 1981a
Tritoplax Manning and Holthuis, 1981a
Viridotheres Manning, 1997b
Waldotheres Manning, 1993j
Zariquieyon Manning and Holthuis, 1989a
Zibrovia Kropp and Manning, 1996a

Species
Acanthonyx depressifrons Manning and Holthuis, 1981a
Acanthonyx minor Manning and Holthuis, 1981a
Achaeus buderes Manning and Holthuis, 1981a
Achaeus powelli Manning, 1982d
Achaeus turbator Manning and Holthuis, 1981a
Afropinnotheres crosnieri Manning, 1993j
Afropinnotheres guinotae Manning, 1993j
Afropinnotheres monodi Manning, 1993j
Alain crosnieri Manning, 1998d
Austinixa hardyi Heard and Manning, 1997h now *Austinixa aidae* (Righi, 1967)
Austinixa behreae (Manning and Felder, 1989) (= *Pinnixa behreae*)
Austinixa gorei (Manning and Felder, 1989) (= *Pinnixa gorei*)
Bathynectes piperitus Manning and Holthuis, 1981a
Calabarium crinodytes Manning and Holthuis, 1981a
Cataleptodius olsoni Manning and Chace, 1990j
Cecidocarcinus brychius Kropp and Manning, 1987e
Cecidocarcinus zibrowii Manning, 1991f
Chaceon alcocki Ghosh and Manning, 1993i
Chaceon atopus Manning and Holthuis, 1989a
Chaceon australis Manning, 1993h
Chaceon bicolor Manning and Holthuis, 1989a
Chaceon chilensis Chirino-Gálvez and Manning, 1989b
Chaceon collettei Manning, 1992e
Chaceon crosnieri Manning and Holthuis, 1989a
Chaceon eldorado Manning and Holthuis, 1989a
Chaceon fenneri (Manning and Holthuis, 1984l) (= *Geryon fenneri*)
Chaceon goreni Galil and Manning, 2001c
Chaceon imperialis Manning, 1992h
Chaceon inglei Manning and Holthuis, 1989a
Chaceon karubar Manning, 1993l
Chaceon macphersoni (Manning and Holthuis, 1988a) (= *Geryon macphersoni*)
Chaceon maritae (Manning and Holthuis, 1981a) (= *Geryon maritae*)
Chaceon mediterraneus Manning and Holthuis, 1989a
Chaceon micronesicus Ng and Manning, 1998a
Chaceon notialis Manning and Holthuis, 1989a
Chaceon poupini Manning, 1992h
Chaceon ramosae Manning, Tavares and Albuquerque, 1989a
Chaceon sanctahelenae Manning and Holthuis, 1989a
Chaceon somaliensis Manning, 1993d
Chaceon yaldwyni Manning, Dawson and Webber, 1989
Dorippe glabra Manning, 1993a
Dorippe irrorata Manning and Holthuis, 1986g
Dorippe trilobata Manning, 1993a
Dorippoides nudipes Manning and Holthuis, 1986g
Ecphantor modestus Manning and Holthuis, 1981a
Epulotheres angelae Manning, 1993g
Ernestotheres conicola (Manning and Holthuis, 1981a) (= *Pinnotheres conicola*)
Ethusa vossi Manning and Holthuis, 1981a
Ethusina beninia Manning and Holthuis, 1981a
Euryozius pagalu Manning and Holthuis, 1981a
Geryon inghami Manning and Holthuis, 1986h
Heikeopsis arachnoides (Manning and Holthuis, 1986g) (= *Nobilum arachnoids*)
Herbstia nitida Manning and Holthuis, 1981a
Hospitotheres powelli Manning, 1993j
Inachus biceps Manning and Holthuis, 1981a
Inachus grallator Manning and Holthuis, 1981a

Inachus nanus Manning and Holthuis, 1981a
Indopinnixa sipunculana Manning and Morton, 1987d
Lillyanella plumipes Manning and Holthuis, 1981a
Luciades agana Kropp and Manning, 1996a
Macropodia doracis Manning and Holthuis, 1981a
Macropodia hesperiae Manning and Holthuis, 1981a
Macrophthalmus (*Macrophthalmus*) *abbreviatus* Manning and Holthuis, 1981a
Mithraculus cinctimanus Stimpson, 1860 (= *Mithrax* (*Mithraculus*) *commensalis* Manning, 1970e)
Mursia mcdowelli Manning and Chace, 1990j
Nannotheres moorei Manning and Felder, 1996b
Nepinnotheres africanus Manning, 1993j
Nepinnotheres androgynus Manning, 1993j
Nepinnotheres sanqueri Manning, 1993j
Nepinnotheres tellinae (Manning and Holthuis, 1981a) (= *Pinnotheres tellinae*)
Paradorippe cathayana Manning and Holthuis, 1986g
Potamocypoda parapugil Tai and Manning, 1984j
Sakaila africana Manning and Holthuis, 1981a
Sindheres karachiensis Kazmi and Manning, 2003a
Sirpus gordonae Manning and Holthuis, 1981a
Spinolambrus notialis (Manning and Holthuis, 1981a) (= *Parthenope notialis*)
Telmatothrix powelli Manning and Holthuis, 1981a
Viridotheres lillyae (Manning, 1993j) (= *Nepinnotheres lillyae*)
Viridotheres marionae Manning, 1997b
Viridotheres viridis (Manning, 1993j) (*Nepinnotheres viridis*)
Zariquieyon inflatus Manning and Holthuis, 1989
Zibrovia galea Kropp and Manning, 1996a

Sporozoa

Thelobania duorara Inversen and Manning, 1958

Stomatopoda

Suprageneric taxa
Bathysquilloidea Manning, 1967f
Erythrosquilloidea Manning and Bruce, 1984e
Bathysquillidae Manning, 1967f
Coronididae, Manning, 1980d
Erythrosquillidae Manning and Bruce, 1984e
Eurysquillidae, Manning, 1977d
Hemisquillidae, Manning, 1980d
Indosquillidae, Manning, 1995d
Nanosquillidae, Manning, 1980d
Odontodactylidae, Manning, 1980d
Parasquillidae, Manning, 1995d
Protosquillidae, Manning, 1980d
Pseudosquillidae, Manning, 1977d
Takusquillidae, Manning, 1995d
Tetrasquillidae, Manning and Camp, 1993b

Genera
Acaenosquilla Manning, 1991b
Acanthosquilla Manning, 1963d
Alachosquilla Schotte and Manning, 1993f
Alimopsis Manning, 1977c
Allosquilla Manning, 1977d
Anchisquilla Manning, 1968c
Anchisquilloides Manning, 1977c
Areosquilla Manning, 1976c
Austrosquilla Manning, 1966
Bathysquilla Manning, 1963d
Bigelowina Schotte and Manning, 1993f
Busquilla Manning, 1978c
Carinosquilla Manning, 1968c
Chorisquilla Manning, 1969b
Cloridina Manning, 1995d
Cloridopsis Manning, 1968c
Crenatosquilla Manning, 1984g
Dictyosquilla Manning, 1968c
Distosquilla Manning, 1977c
Echinosquilla Manning, 1969b
Erythrosquilla Manning and Bruce, 1984e
Erugosquilla Manning, 1995d
Eurysquilla Manning, 1963d
Eurysquilloides Manning, 1963d
Fallosquilla Manning, 1995d
Fennerosquilla Manning and Camp, 1983b
Gibbesia Manning and Heard, 1997a
Gonodactylaceus Manning, 1995d
Gonodactylellus Manning, 1995d
Gonodactylinus Manning, 1995d
Gonodactyloideus Manning, 1984d
Gonodactylolus Manning, 1970h
Gonodactylopsis Manning, 1969b
Hadrosquilla Manning, 1966
Haptosquilla Manning, 1969b
Heterosquilla Manning, 1963d
Heterosquilloides Manning, 1966
Hoplosquilloides Manning, 1978c
Humesosquilla Manning and Camp, 2001b
Kasim Manning, 1995d
Keija Manning, 1995d
Kempina Manning, 1978c
Keppelius Manning, 1978c
Lenisquilla Manning, 1977c
Levisquilla Manning, 1977c
Lophosquilla Manning, 1968c
Lysiosquillina Manning, 1995d
Lysiosquilloides Manning, 1977d
Meiosquilla Manning, 1968c
Mesacturoides Manning, 1978e
Mexisquilla Manning and Camp, 1981f
Miyakea Manning, 1995d
Mortensenenus Manning, 1990a
Nannosquilla Manning, 1963d
Nannosquilloides Manning, 1977d
Natosquilla Manning, 1978d
Neclorida Manning, 1995d
Neocoronida Manning, 1976b
Neogonodactylus Manning, 1995d
Oratosquilla Manning, 1968c
Oratosquillina Manning, 1995d
Parasquilla Manning, 1961b
Parvisquilla Manning, 1973b
Platysquilla Manning, 1967f

Platysquilloides Manning and Camp, 1981f
Pontiosquilla Manning, 1995d
Pseudosquillana Cappola and Manning, 1995a
Pseudosquillisma Cappola and Manning, 1995a
Pullosquilla Manning, 1978
Quollastria Manning, 1995a
Raoulius Manning, 1995d
Raoulserenea Manning, 1995d
Rissoides Manning and Lewinsohn, 1982c
Taku Manning, 1995d
Tetrasquilla Manning and Chace, 1990j
Toshimitsu Manning, 1995d
Schmittius Manning, 1972d
Squilloides Manning, 1968
Tuleariosquilla Manning, 1978c

Species
Acanthosquilla derijardi Manning, 1970c
Acanthosquilla humesi Manning, 1968a (= *Bigelowina phalangium* (Fabricius, 1798))
Alachosquilla floridensis (Manning, 1962d) (= *Lysiosquilla floridensis*)
Allosquilla africana (Manning, 1970g) (= *Heterosquilla africana*)
Alima orientalis Manning, 1978c
Areosquilla hanseni Manning, 1976c
Areosquilla interstincta Manning, 1976c
Bathysquilla microps (Manning, 1961c) (= *Lysiosquilla microps*)
Busquilla plantei Manning, 1978c
Chorisquilla andamanica Manning, 1975b
Chorisquilla mehtae Erdmann and Manning, 1998k
Chorisquilla pococki Manning, 1975b
Clorida japonica Manning, 1978c
Clorida latispina Manning, 1968e (= *C. bombayensis* Chhapgar and Sane, 1967)
Cloridina malaccensis (Manning, 1968e) (= *Clorida malaccensis*)
Cloridopsis aquilonaris Manning, 1978c
Coronida glasselli Manning, 1976b
Coronida schmitti Manning, 1976b
Erugosquilla grahami Ahyong and Manning, 1998f
Erugosquilla hesperia (Manning, 1968a) (= *Squilla hesperia*)
Erugosquilla serenei Ahyong and Manning, 1998f
Erythrosquilla megalops Manning and Bruce, 1984e
Eurysquilla chacei Manning, 1969c
Eurysquilla galatheae Manning, 1977d
Eurysquilla holthuisi Manning, 1969c
Eurysquilla lelouffi Manning, 1977d
Eurysquilla pacifica Manning, 1975a
Eurysquilla solari Manning, 1970b
Faughnia formosae Chan and Manning, 1997g
Faughnia profunda Manning and Makarov, 1978k
Gonodactylaceus aloha (Manning and Reaka, 1981d) (= *Gonodactylaceus falcatus* (Forskal, 1775))
Gonodactylaceus insularis (Manning and Reaka, 1982) (= *Gonodactylaceus falcatus* (Forskal, 1775))
Gonodactylaceus randalli (Manning, 1978a) (= *Gonodactylus randalli*)
Gonodactylaceus siamensis (Manning and Reaka, 1981e) (= *Gonodactylaceus falcatus* (Forskal, 1775))
Gonodactylellus annularis Erdmann and Manning, 1998k
Gonodactylellus bicarinatus (Manning, 1968a) (= *Gonodactylus bicarinatus*)
Gonodactylellus caldwelli Erdmann and Manning, 1998k
Gonodactylellus choprai (Manning, 1967d) (= *Gonodactylus choprai*)
Gonodactylellus crosnieri (Manning, 1968a) (= *Gonodactylus crosnieri*)
Gonodactylellus lanchesteri (Manning, 1967d) (= *Gonodactylus lanchesteri*)
Gonodactylellus micronesicus (Manning, 1971d) (= *Gonodactylus micronesicus*)
Gonodactylellus rubriguttatus Erdmann and Manning, 1998k
Gonodactyloideus cracens Manning, 1984d
Gonodactyloluspaulus (Manning, 1970h) (= *Gonodactylus paulus*)
Gonodactylopsis komodoensis Erdmann and Manning, 1998k
Gonodactylus botti Manning, 1975f
Gonodactylus childi Manning, 1971d
Haptosquilla moosai Erdmann and Manning, 1998k
Haptosquilla philippinensis Garcia and Manning, 1982e
Haptosquilla setifera Manning, 1969b
Haptosquilla togianensis Erdmann and Manning, 1998k
Harpiosquilla indica Manning, 1969i
Harpiosquilla japonica Manning, 1969i
Harpiosquilla malagasiensis Manning, 1978c
Harpiosquilla melanoura Manning, 1968a
Harpiosquilla stephensoni Manning, 1969i
Heterosquilloides insolita (Manning, 1963a) (= *Lysiosquilla insolita*)
Hoplosquilla said Erdmann and Manning, 1998k
Hoplosquilloides coronatus Manning, 1978c
Humesosquilla decimdentata (Manning, 1970b) (= *Squilla decimdentata*)
Kasim insuetus (Manning, 1970e) (= *Heterosquilla insueta*)
Levisquilla inermis (Manning, 1965) (= *Squilla inermis*)
Lysiosquilla campechiensis Manning, 1962d
Lysiosquilla monodi Manning, 1977d
Lysiosquilla panamica Manning, 1971f
Lysiosquillina sulcata (Manning, 1978b) (= *Lysiosquilla sulcata*)
Manningia arabica Manning, 1990f
Manningia australiensis Manning, 1970e
Manningia notialis Manning, 1966b
Manningia posteli Manning, 1977d
Manningia zehntneri Manning, 1975d
Meiosquilla dawsoni Manning, 1970b
Meiosquilla randalli Manning, 1962d (= *Squilla randalli*)
Mesacturoides crinitus (Manning, 1962f) (= *Gonodactylus crinitus*)
Mortensenenus minus Manning, 1990a
Nannosquilla adkisoni Camp and Manning, 1982f
Nannosquilla anomala Manning, 1967e
Nannosquilla antillensis (Manning, 1961b) (= *Lysiosquilla antillensis*)

Nannosquilla californiensis (Manning, 1961a) (= *Lysiosquilla californiensis*)
Nannosquilla canica Manning and Reaka, 1979c
Nannosquilla carolinensis Manning, 1970b
Nannosquilla dacostai Manning, 1970b
Nannosquilla disca Camp and Manning, 1986p
Nannosquilla galapagensis Manning, 1972d
Nannosquilla hancocki (Manning, 1961b) (= *Lysiosquilla hancocki*)
Nannosquilla heardi Camp and Manning, 1982f
Nannosquilla indonesica Erdmann and Manning, 1998k
Nannosquilla schmitti (Manning, 1962d) (= *Lysiosquilla schmitti*)
Nannosquilla similis Manning, 1972d
Nannosquilla taguensis Camp and Manning, 1982f
Nannosquilla taylori Manning, 1969c
Nannosquilla tobagoensis Schotte and Manning, 1993f
Nannosquilla vasquezi Manning, 1979a
Nannosquilla virginalis Camp and Manning, 1986p
Nannosquilla whitingi Camp and Manning, 1982f
Nannosquilla yucatanica Camp and Manning, 1986p
Neclorida miersi (Manning, 1968a) (= *Clorida miersi*)
Neocoronida cocosiana (Manning, 1972d) (= *Neocoronida cocosiana*)
Neocoronida martensi Manning, 1978c
Neogonodactylus albicinctus (Manning and Reaka, 1979c) (= *Gonodactylus albicinctus*)
Neogonodactylus austrinus (Manning, 1969c) (= *Gonodactylus austrinus*)
Neogonodactylus bredini (Manning, 1969c) (= *Gonodactylus bredini*)
Neogonodactylus campi Manning, 1997e
Neogonodactylus caribbaeus (Schotte and Manning, 1993f) (= *Gonodactylus caribbaeus*)
Neogonodactylus costaricensis (Manning and Reaka, 1979c) (= *Gonodactylus costaricensis*)
Neogonodactylus lacunatus (Manning, 1966a) (= *Gonodactylus lacunatus*)
Neogonodactylus lightbourni (Manning and Hart 1981i) (= *Gonodactylus lightbourni*)
Neogonodactylus minutus (Manning, 1969c) (= *Gonodactylus minutes*)
Neogonodactylus petilus (Manning, 1970b) (= *Gonodactylus petilus*)
Neogonodactylus pumilus (Manning, 1970b) (= *Gonodactylus pumilus*)
Neogonodactylus torus (Manning, 1969c)
Neogonodactylus wenneri Manning and Heard, 1997a
Neogonodactylus zacae (Manning, 1972a)
Odontodactylus hawaiiensis Manning, 1967c
Oratosquillina asiatica (Manning, 1978d) (= *Oratosquilla asiatica*)
Oratosquillina gravieri (Manning, 1978d) (= *Oratosquilla gravieri*)
Oratosquillina hindustanica (Manning, 1978d) (= *O. inornata* Tate, 1883)
Oratosquillina megalops (Manning, 1980) (= *O. inornata* Tate, 1883)
Oratosquillina microps (Garcia and Manning, 1982e)
Oratosquillina pentadactyla (Manning, 1978d)
Oratosquillina solicitans (Manning, 1978d) (= *O. inornata* Tate, 1883)
Oratosquillina stephensoni Manning, 1978d
Parasquilla boschii Manning, 1970b
Parasquilla coccinea Manning, 1962a
Parasquilla meridionalis Manning, 1961b
Parasquilla similis Manning, 1970b
Platysquilloides enodis (Manning, 1962d) (= *Lysiosquilla enodis*)
Platysquilloides lillyae (Manning, 1977d) (= *Allosquilla lillyae*)
Protosquilla calypso Manning, 1974b
Pseudosquillisma adiastalta (Manning, 1964b) (= *Pseudosquilla adiastalta*)
Pseudosquillisma guttata (Manning, 1972b) (= *Pseudosquilla guttata*)
Pterygosquilla armata capensis Manning, 1969a
Pullosquilla litoralis (Michel and Manning, 1971c) (= *Austrosquilla litoralis*)
Pullosquilla malayensis (Manning, 1968c) (= *Austrosquilla malayensis*)
Pullosquilla thomassini Manning, 1978c
Quollastria imperialis (Manning, 1965) (= *Squilla imperialis*)
Quollastria ornata (Manning, 1971a) (= *Oratosquilla ornata*)
Quollastria striata (Manning, 1978d) (= *Oratosquilla striata*)
Quollastria subtilis (Manning, 1978d) (= *Oratosquilla subtilis*)
Raoulserenea hieroglyphica (Manning, 1972b) (= *Pseudosquilla hieroglyphica*)
Rissoides africanus (Manning, 1974b) (= Meiosquilla *africanus*)
Rissoides barnardi (Manning, 1975c) (= *Meiosquilla barnardi*)
Rissoides calypso (Manning, 1974b) (= *Meiosquilla calypso*)
Schmittius peruvianus Manning, 1972d
Siamosquilla sexava Erdmann and Manning, 1998 (= *S. laevicaudata* Sun and Yang, 1998)
Squilla aculeata calmani Manning, 1977
Squilla cadenati Manning, 1970g
Squilla caribaea Manning, 1969c
Squilla chydaea Manning, 1962d
Squilla deceptrix Manning, 1969c
Squilla discors Manning, 1962d
Squilla edentata australis Manning, 1969c
Squilla grenadensis Manning, 1969c
Tuleariosquilla parvula Manning, 1978c

Thalassinidea

Suprageneric
Ctenochelidae Manning and Felder, 1991e
Anacalliinae Manning and Felder, 1991e
Callichirinae Manning and Felder, 1991e
Callianopsinae Manning and Felder, 1991e
Ctenochelinae Manning and Felder, 1991e
Eucalliinae Manning and Felder, 1991e

Genera

Biffarius Manning and Felder, 1991e
Corallianassa Manning, 1987c
Corallichirus Manning 1992i
Dawsonius Manning and Felder, 1991e
Eucalliax Manning and Felder, 1991e
Gilvossius Manning and Felder, 1992b
Necallianassa Heard and Manning, 1998h
Neotrypaea Manning and Felder, 1991e
Nihonotrypaea Manning and Tamaki, 1998i
Notiax Manning and Felder, 1991e
Poti Rodrigues and Manning, 1992h
Pseudobiffarius Heard and Manning, 2000b
Sergio Manning and Lemaitre, 1994a

Species

Biffarius delicatulus Rodrigues and Manning, 1992f
Calliax punica de Saint Laurent and Manning, 1982i
Corallianassa xutha Manning, 1988d
Eucalliax cearaensis Rodrigues and Manning, 1992f
Eucalliax mcilhennyi Manning and Felder, 1994b
Lepidophthalmus rafai Felder and Manning, 1998b
Lepidophthalmus richardi Felder and Manning, 1997c
Necallianassa berylae Heard and Manning, 1998h
Neocallichirus cacahuate Felder and Manning, 1995c
Neocallichirus lemaitrei Manning, 1993c
Neocallichirus nickellae Manning, 1993c
Poti gaucho Rodrigues and Manning, 1992h
Pseudobiffarius caesari Heard and Manning, 2000b
Sergio mericeae Manning and Felder, 1995b

Decapod Fossils

Genera

Acantholambrus Blow and Manning, 1996c
Ameridromia Blow and Manning, 1996c
Eocarpilus Blow and Manning, 1996c
Eohalimede Blow and Manning, 1996c
Eriosachila Blow and Manning, 1996c
Martinetta Blow and Manning, 1997i
Matutites Blow and Manning, 1996c
Pseudohepatiscus Blow and Manning, 1996c
Santeecarcinus Blow and Manning, 1996c
Santeella Blow and Manning, 1996c
Santeexanthus Blow and Manning, 1996c
Sarahcarcinus Blow and Manning, 1996c
Titanocarcinus Blow and Manning, 1996c
Titanodorippe Blow and Manning, 1996c
Viacarcinus Blow and Manning, 1996c
Wisonimaia Blow and Manning, 1996c

Species

"*Paguristes*" *wheerei* Blow and Manning, 1996c
Acantholambrus baumi Blow and Manning, 1996c
Albunea *hahnae* Blow and Manning, 1996c
Ameridromia hyneorum Blow and Manning, 1996c
Calappilia sitzi Blow and Manning, 1996c
Cyrtorhina fusseli Blow and Manning, 1996c
Dromidia bedetteae Blow and Manning, 1996c
Eocarpilus carolinensis Blow and Manning, 1996c
Eohalimede sandersi Blow and Manning, 1996c
Eohalimede walleri Blow and Manning, 1996c
Eriosachila petiti Blow and Manning, 1996c
Laevicarcinus dockeryi Blow and Manning, 1996c
Lophoranina raynorae Blow and Manning, 1996c
Lophoranina rossi Blow and Manning, 1996c
Martinetta palmari Blow and Manning, 1997i
Matutites anthonyae Blow and Manning, 1996c
Prohomila katunal Blow and Manning, 1996c
Pseudohepatiscus marinoi Blow and Manning, 1996c
Titanocarcinus purdyi Blow and Manning, 1996c
Titanodorippe eocenica Blow and Manning, 1996c
Santeecarcinus harmatuki Blow and Manning, 1996c
Santeella lillyae Blow and Manning, 1996c
Santeexanthus wardi Blow and Manning, 1996c
Sarahcarcinus campbellorum Blow and Manning, 1996c
Viacarcinus druidi Blow and Manning, 1996c
Wisonimaia ethelae Blow and Manning, 1996c
Wisonimaia scheiderorum Blow and Manning, 1996c

Taxa Named for Raymond Manning
[up to 2009]

Genera

Eumanningia Crosnier, 2000 (Caridea)
Grynaminna Poore, 2000 (Thalassineidea) [an anagram of Ray Manning]
Manningia Serène, 1960 (Stomatopoda)
Manningiana Pretzmann, 1972 (Brachyura)
Manningis Al-Khayat and Jones, 1996 (Brachyura)
Raylilia Galil, 2001 (Brachyura) [honors both Ray and Lilly Manning]
Raymanninus Ng, 2000 (Brachyura)
Raymunida Macpherson and Machordam, 2000 (Anomura)
Raysquilla Ahyong, 2000 (Stomatopoda)
Raytheres Campos, 2002 (Brachyura)

Species

Acanthosquilla manningi Makarov, 1978 (Stomatopod)
Acoridon manningi Adkison, Heard & Hopkins, 1983 (Stomatopod)
Alain raymondi Ahyong and Ng, 2008 (Brachyura)
Arcotheres rayi Ahyong and Ng, 2007 (Brachyura)
Calaxiopsis manningi Komai, 2000 (Thalassinidea)
Calaxius manningi Kensley, Lin, and Yu, 2000 (Thalassinidea)
Cambarus manningi Hobbs, 1981 (Astacidea)
Cyclodorippe manningi Tavares, 1993 ((Brachyura)
Eumanningia pliarthron Crosnier, 2000 (Caridea)
Eunephrops manningi (Holthuis, 1975) (Astacidea)
Holothuria mannigi Pawson, 1978 (Holothuroidea)
Latreillia manningi Williams, 1982 now *Latreillia elegans* Roux, 1830 (Brachyura)
Lepidophthalmus manningi Felder and Staton, 2000 (Thalassinidea)
Lithodes manningi Macpherson, 1988 (Anomura)
Lysiosquilla manningi Boyko, 2000 (Stomatopoda)
Manningia raymondi Bruce, 1986 (Stomatopoda)
Microprosthema manningi Goy and Felder, 1988 (Caridea)
Nanogalathea raymondi Tirmizi, 1980 (Anomura)

Nannosquilla raymanningi Salgado-Barragán and Hendrickx, 1998 (Stomatopoda)
Naushonia manningi Akvarez, Villalobos, and Iliffe (Thalassinidea)
Neonesidea manningi Maddocks, 1975 (Ostracoda)
Oratosquillina manningi Ahyong, Chan and Liao, 2000 (Stomatopoda)
Oxyrhynchaxius manningi Lin, Kensley, and Chan, 2000 (Thalassinidea)
Paralomis manningi Williams, Smith, and Baco, 2000 (Anomura)
Pontonia manningi Fransen, 2000 (Caridea)
Porcellana lillyae Lemaitre and Campos 2000 (Anomura) [honors both Ray and Lilly Manning]
Raninella manningi Bishops and Williams, 2000 (Anomura)
Raysquilla manningi Ahyong, 2000 (Stomatopoda)
Sergia manningorum Froglia and Gramitto, 2000 (Dendrobranchiata) [honors both Ray and Lilly Manning]
Thor manningi Chace, 1972 (Caridea)
Trizocheles manningi Forest, 1986 (Anomura)
Typton manningi Bruce, 2000 (Caridea)
Uroptychus raymondi Baba, 2000 (Anomura)

Additional Taxa Named for Lilly King Manning

Lillyanella Manning and Holthuis, 1981a (Brachyura)
Viridotheres lillyae (Manning, 1993j) (= *Neopinnotheres lillyae*) (Brachyura)
Platysquilloides lillyae (Manning, 1977d) (= *Allosquilla lillyae*) (Stomatopoda)
Santeella lillyae Blow and Manning, 1996c (Brachyura)

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These publications are arranged in chronological order. This listing adds to and corrects the list published in 2000 in the Manning Memorial volume.

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