

Appendix I

Marine macro-algae recorded from Heard Island. (From Ricker 1987).

CHLOROPHYTA — Green algae	
Bonnemaisoniaceae	
Bonnemaisoniales	
Nematiales	
Chaetangiaceae	
Chaetangiales	
<i>Chaetangium fastigiatum</i> (Bory de Saint-Vincent) J. Agardh	
Cigartinales	
Cigartimaceae	
<i>Iridaea cordata</i> (Turner) Bory de Saint-Vincent	
Plocamiales	
Plocamiaceae	
<i>Plocamium hookeri</i> Harvey in Hooker f. and Harvey	
Palmariales	
Palmariaceae	
<i>Palmaria decipiens</i> (Reinsch) R. W. Ricker comb. nov.	
<i>Palmaria georgica</i> (Reinsch) R. W. Ricker comb. nov.	
Ceramiales	
Ceramataceae	
<i>Ballia callitricha</i> (C. Agardh) Kützing	
<i>Plumatoropsis eatoni</i> (Dickie) De Toni	
Delesseriaceae	
<i>Schizosera condensata</i> (Reinsch) R. W. Ricker comb. nov.	
Rhodomeleaceae	
<i>Rhodomele vago</i> Hooker f. and Harvey	
<i>Lophurella hookeriana</i> (J. Agardh) Falkenberg	
Bangiataceae	
Bangiatales	
RHODOPHYTA — Red algae	
Durvillaeaceae	
<i>Durvillaea antarctica</i> (Chamisso) Hariot	
Durvillaeales	
<i>Desmarestia chordalis</i> Hooker f. and Harvey	
Desmarestiaceae	
Desmarestiales	
PHAEOPHYTA — Brown algae including giant kelps	
Cladophorales	
Cladophoraceae	
<i>Rhizoclonium ambiguum</i> (Hooker f. and Harvey) Kützing	
Acrosiphoniales	
Acrosiphoniaceae	
<i>Acrosiphonia pacifica</i> (Montagne) J. Agardh	
Codiolaceae	
<i>Urospora penicilliformis</i> (Roth) Areschoug	
Cladophorales	
Cladophoraceae	
<i>Rhizoclonium ambiguum</i> (Hooker f. and Harvey) Kützing	
PHAEOPHYTA — Brown algae including giant kelps	
Desmarestiales	
Desmarestiaceae	
<i>Desmarestia chordalis</i> Hooker f. and Harvey	
Durvillaeales	
Durvillaeaceae	
<i>Durvillaea antarctica</i> (Chamisso) Hariot	
Bangiataceae	
Bangiatales	
Rhodomeleaceae	
<i>Rhodomele vago</i> Hooker f. and Harvey	
<i>Lophurella hookeriana</i> (J. Agardh) Falkenberg	

Appendix 2

Bryophytes recorded from Heard Island. (From Bergstrom and Seppelt 1988, Bergstrom and Selkirk 1997, Värra and Gremmen (in press), Bergstrom (unpubl. data). * indicates taxa that are currently undergoing taxonomic investigation that are likely to lead to nomenclature change in the near future (Ochyra, pers. comm. 2004).

MUSCI — MOSESSES	
Grimmiaceae	
Grimmiatales	
* <i>Grimmia immersoleucophylla</i> (Müll. Hal.) Paris	
* <i>Racomitrium crispulum</i> (Hook. f. and Wilson) Hook. f.	
and Wilson var. <i>crispulum</i>	
<i>Grimmia</i> sp.	
<i>Racomitrium lanuginosum</i> (Hedw.) Brid.	
* <i>Schistidium apocarpum</i> (Hedw.) Bruch and Schimp.	
<i>Schistidium falcatum</i> (Hook. f. and Wilson) B. Bremner	
Bryales	
Bryaceae	
<i>Bryum dichotomum</i> Hedw.	
<i>Bryum pseudotriquetrum</i> (Hedw.) R. Gaertn., B. Mey. and Scherb.	
<i>Bryum</i> sp.	
<i>Pohlia wahlenbergii</i> (F. Weber and D. Mohr) A. L. Andrews	
<i>Pohlia</i> sp.	
Bartramiaceae	
<i>Bartramia patens</i> Brid.	
<i>Philonthus</i> cf. <i>angustifolia</i> Kaal.	
Orthotrichales	
Orthotrichaceae	
<i>Muellierella crassifolia</i> (Hook. f. and Wilson) Dusen var. <i>acuta</i> (Müll. Hal.) Vitt	
Hypnales	
Amblystegiaceae	
<i>Amblystegium serpens</i> (Hedw.) Schimp.	
<i>Santonia uncinata</i> (Hedw.) Loeske	
Brachytheciaceae	
<i>Brachythecium austrosalabrosum</i> (Müll. Hal.) Kindb.	
<i>Brachythecium paradoxum</i> (Hook. f. and Wilson) Ignatov and Hutnunen	
Trichostomum sp.	
<i>Syntrichia anderssonii</i> (Angstr.) R. H. Zander	
<i>Syntrichia gehlbopsis</i> (Müll. Hal.)	
Pottiales	
<i>Vernicidens tortifolius</i> (Hook. f. and Wilson) Reimers	
* <i>Vernicidens microcarpus</i> (Mitt.) Zanten	
<i>Blechna robusta</i> Hampe	
* <i>Blechna conlecta</i> (Hook. f. and Wilson) Müll. Hal.	
Seligeriales	
Seligeriaceae	
<i>Dicranoweisia breviseta</i> Cardot	
* <i>Dicranoweisia brevipes</i> (Müll. Hal.) Cardot	
<i>Dicranoweisia antarctica</i> (Müll. Hal.) Kindb.	
<i>Dicranoloma billardieri</i> (Brid. ex Hoppe) Paris	
<i>Dicranella</i> sp.	
<i>Dicranella campylophylla</i> (Taylor) A. Jägger	
Dicranaceae	
<i>Dirichium subaustrale</i> Broth.	
<i>Dirichium immersum</i> Zanten	
<i>Dirichium conicum</i> (Mont.) Mitt.	
<i>Ceratodon purpureus</i> (Hedw.) Brid.	
Dirichaceae	
Dirichiales	
Dicranales	
Fissidentaceae	
<i>Fissidens</i> sp.	
Fissidentiales	
<i>Andreaea mutabilis</i> Hook. f. and Wilson	
* <i>Andreaea acuminata</i> Mitt.	
Andreaeaceae	
Andreaeales	

past few years as remote satellite-based communications systems have become reliable enough to transmit sufficient data regularly. In addition to this, the project required the development of some customized software (HeardMap), which generated clear maps of each animal's whereabouts and spatial grids showing mathematically-derived cumulative animal foraging intensity over a defined time scale. Integrated with these two dimension maps were summaries of the dive behaviour collated from the TDRs. These data were available simultaneously at a field camp on Heard Island and on the *Aurora Australis*. In conjunction with preliminary analyses of diet content, the mapping data were used for day-to-day co-ordination of the ship-based activities.

The plan for the work on *Aurora Australis* comprised a fixed survey grid that covered shelf waters around Heard Island and a series of smaller, intensive measurement areas that were defined by the predator activities ("predator boxes"). The survey grid was based on our understanding of the region's oceanographic processes, much of which had been collated from satellite-derived data (including sea-surface temperature, ocean colour and ocean height) in addition to data from earlier marine science work, fisheries effort and predator studies. Three large rectangles were selected on the eastern, southern and western margins of the Heard Island plateau. Most work was conducted in the eastern and southern rectangles. Representative transects in the rectangles using multi-frequency acoustics and regular CTD stations to define fine scale physical processes were conducted. Once the predator boxes had been determined using the tracking data, more intense acoustic and trawl surveys were

conducted within them that aimed to characterize, quantify and map the prey within the box, determine diurnal variability and, if possible, determine differences between areas of high and low foraging intensity within each box.

The Heard Island predator-prey and ecosystem study has generated a huge amount of data that, at the time of writing, was in the process of being analysed. These analyses include purpose-designed methods such as the molecular diet work and the development of spatial software, but the challenge will be integrating the different data-types and the analysis and interpretation of key linkages. The degree to which we can achieve this integration will set a new standard for ecosystem experiments, such as this one, that aim to improve our ability to manage fisheries sustainably. In the Heard Island context, this work provides a window into only a brief part of one summer of this dynamic and productive region. Further measures of variability between and within seasons will be required. As the model is further developed, we will be able to explore the components of the system that are most influential, and focus research effort on providing the best estimates for those parameters. Technological developments and the maturity of our science have made large scale ecosystem experiments such as this one achievable, and they clearly represent a new basis for the planning of future research efforts around Heard Island and elsewhere in the Southern Ocean.

Acknowledgements

The Heard Island and McDonald Island Marine Ecosystem study is the result of work from many people over many years; we thank them all.

COLLEMBOLA — Arthropleona — Isotomidae — *continued*

Cryptopygus punctatus Enderlein
Folsomotoma punctata Wahlgren
Isotoma sp.
Archisotoma brucei? Carpenter
INSECTA
Thysanoptera
Apterostripts *apertis* Daniel
Coleoptera
Hydracarina
Meropehatus *chumi* Enderlein
Curculionidae
Canonopsis sericeus C. O. Waterhouse
Paltrhoeus eatoni C. O. Waterhouse
Bothromelopus gracillipes C. O. Waterhouse
Bothromelopus brevis C. O. Waterhouse
Ectemnorhinus viridis G. R. Waterhouse
Diptera
Chironomidae
Temalotegon sp.
Micropezidae
Calycopharyx moseleyi Eaton
Sphaeroceridae
Anatalanta aperta Eaton
Ephydriidae
Amalopharyx maritima Eaton
Siphonaptera
Rhopalopsyllidae
Parapsyllus magellanicus Jordan
Pygopsyllidae
Nobopsylla kerguelensis Taschenberg
Mallophaga
Echinophthiridae
Lepidophthirus macrorhini Enderlein
Menoponidae
Actornithophilus pauliani Seguy
Astromenopon *fuscoscirtum* group
Phillopteridae
Austrogomoides macquarrens Harrison
Austrogomoides conchi von Keller
Austrogomoides cristati von Keller
Austrogomoides bicornatus von Keller
Haffneria grandis Piaget
Naubates prioni Enderlein
Naubates clypeatus Giebel
Pelmatoecerrandra enderleini Eichel
Pelmatoecerrandra setosa Giebel
Quadracaps vaginatis Timmermann
Saemundssonina pterodromae Timmermann
Saemundssonina australis Timmermann
Saemundssonina euryrhyncha Giebel
Saemundssonina lani O. Fabricius
Saemundssonina lockleyi Clay
Lepidoptera
Yponomeutidae
Embryonopsis hallicella Eaton
ACARINA
Ixodida
Ixodidae
Ixodes kerguelensis Andre
Ixodes urvae White
Mesostigmata
Veigidae
Cynhydryolaelaps watsoni Hirschmann
Ologamasidae
Parasitiphis jeanneli Andre
Parasitiphidae
Athiasella sp.
Lalogrammus sp.
Acugamasus sp.
Davacaridae
Davacarus gressitti Hunter

NEMATODA — *continued*
Desmodoridae
Eubostrius guerni Certes
Monhysteridae
Monhystera sp.
ROTIFFERA
Admetia sp.
Admetia sp.
Bdellionda unidentified
Callidima sp. 2 Richters
Callidima sp. 5 Richters
Cephalodella gibba Ehrenberg
Cephalodella sterna Gosse
Cephalodella ventripes Dixon-Nuttall
Collothea ornata cornuta Dobie
Colurilla colurus compressa Lucks
Dicranophorus sp.
Encentrum heardenis Dartnall
Encentrum mustela Milne
Encentrum uncatum Milne
Euphanes senia O. F. Muller
Euchlams sp.
Habrotricha constricta Dujardin
Habrotricha sp.
Lepadella patella Muller
Lepadella triptera Ehrenberg
Linda tornosa Dujardin
Notholca hollowayi Dartnall
Notholca sp.
Nolomata glyphura Wilfert
Pygura sp.
Resicula gelida Harring and Myers
Rhinoglena frontalis Ehrenberg
Rotatoria rotatoria Pallas
Trichocerca brachyura Gosse
ANNELIDA
OLIGOCHAETA
Megascopelidae
Microscoplex kerguelanum Grube
Lumbricidae
Dendrotrilus rubidus Savigny
Enchytraeidae
Lumbricillus macquarrens Benham
Lumbricillus lineatus Muller
Lumbricillus maximus Michaelsen
Lumbricillus sp.
ARTHROPODA
CRUSTACEA
Brachiopoda
Cladocera
Alona weinecki Studer
Pleuroxus willetti Studer
Macrotrix hirsuticornis Norman and Brady
Daphniopsis studenti Ruhe
Copepoda
Calanoida
Boeckella brevicaudata Brady
Harpacticoida
Canthocamphus sp. 1 Richters
Epactophanes richardi Richters
Ostracoda
COLLEMBOLA
Arthropleona
Neannitidae
Friesia tilbrooki Wise
Friesia bispinosa Deharveng
Onychiuridae
Tullbergia bisetosa Börner
Tullbergia templei Wise
Isotomidae
Cryptopygus caecus Willem

Appendix 4 — *continued*

Appendix 2 — *continued*MUSCI — MOSESSES — *continued*

Polytrichales

Polytrichaceae

Polytrichastrum alpinum (Hedw.) G. L. Sm.*Polytrichum piliferum* Hedw.

Polytrichaceae sp.

Notoligotrichum australe (Hook. f. and Wilson) G. L. Sm.

HEPATICAE — LIVERWARTS

Jungermanniales

Cephaloziaceae

Cephalozia badia (Gottsche) Steph.

Cephaloziellaceae

Cephaloziella varians (Gottsche) Steph.

Jungermanniaceae

Anastrophyllum auritum (Lehm.) Steph.*Cryptochila grandiflora* (Lindenb. and Gottsche) Grolle*Jungermannia coniflora* Schiffn.*Lophozia leucorhiza* (Mitt.) R. M. Schust.

Gymnomitriaceae

Herzogobryum atrocipillum (Hook. f. and Taylor) Grolle*Herzogobryum vermiculare* (Schiffn.) GrolleHEPATICAE — LIVERWORTS — Jungermanniales — *continued*

Blepharidophyllaceae

Blepharidophyllum densifolium (Hook.) C. Massal.

Geocalycaceae

Chiloscyphus coadunatus (Sw.) J. J. Engel and R. M. Schust.*Chiloscyphus gremmenii* Váňa spec. nova*Clasmatocolea rigens* (Hook. f. and Taylor) J. J. Engel*Pachyglossa fissa* (Mitt.) Herzog and Grolle*Pachyglossa grolleana* Váňa, spec. Nova*Pedinophyllopsis abdita* (Sull.) R. M. Schust. and Inoue

Metzgeriales

Fossombronaceae

Austrofossombronina australis (Mitt.) R. M. Schust.

Marchantiales

Aneuraceae

Riccardia georgiensis (Steph.) Gabriela G. Hässel subsp.*sympodea* R. M. Schust.*Riccardia* sp.

Marchantiaceae

Marchantia berteriana Lehm. and Lindenb.

Appendix 3

Vascular plants recorded from Heard Island. From George *et al.* (1993) and Turner *et al.* (in press). *denotes recorded from McDonald Island.

Asteraceae

Leptinella plumosa Hook. f.

Apiaceae

Azorella selago Hook. f.

Brassicaceae

Pringlea antiscorbutica R. Br. ex Hook. f.

Caryophyllaceae

Colobanthus kerguelensis Hook. f.

Callitrichaceae

Callitriche antarctica Engelm. ex Hegelm.

Poaceae

Deschampsia antarctica E. Desv. In J. E. GayPoaceae — *continued**Poa annua* L.**Poa cookii* Hook. f.*Poa kerguelensis* (Hook. f.) Steud.*Poa cookii* × *kerguelensis* hybrid

Portulacaceae

Montia fontana L.

Ranunculaceae

Ranunculus crassipes Hook. f.

Rosaceae

Acaena magellanica (Lam.) Vahl.

Appendix 4

Invertebrates recorded from Heard Island. The main source of these data is a list compiled by P. Greenslade. The mite list was compiled by D. J. Marshall, and the insects updated by S. L. Chown — adapted from Chown *et al.* (in press).
^ = introduced species.

PROTISTA

Rhizopoda

Arcella sp.*Arcella vulgaris* Ehrenberg*Diffugia constricta* Ehrenberg*Diffugia globulosa* Dujardin*Diffugia piriformis* Perty*Euglypha semimulum* Ehrenberg*Nebella collaris* Ehrenberg

Ciliata

nr. *Paramecium* sp.

ACOELOMATA

Platyhelminthes

GASTROTRICHA

Chaetonotus sp.

TARDIGRADA

Acutuncus antarcticus Richters*Dactylobiotus* sp.*Echimisus* sp.*Hypsibius dujardini* Doy*Hypsibius* sp. nov.*Macrobiotus oberhauseri* Doy (doubtful record, W. Miller, pers. comm.)

"Minibiotus asteris"

Macrobiotus sp.

NEMATODA

Mononchidae

Coomansia gerlachei de Man

Dorylaimidae

Mesodorylaimus sp. nov.*Endorylaimus* sp. nov.

Appendix 4 — *continued*ACARINA — Mesostigmata — *continued*

Laelapidae
Androlaelaps pachyptilae Zumpt and Till
Stevacarus evansi Hunter
Stevacarus claggi Hunter
Digamasellidae
Digamasellus templei Hunter
Prostigmata
Pygmephoridae
gen. species
Scutacaridae
Disparipes antarcticus Richters
Nanorchestidae
Nanorchestes antarcticus Womersley and Strandtmann
Nanorchestes sp.
Eupodidae
Eupodes sp. 1
Halacaridae
Isobacterus magnus Lohmann
Rhombognathus auster Bartsch
Rhombognathus apsteini Lohmann
Lohmannella falcata Hodge
Wertella tera Bartsch
Tydeidae
Tydeus sp. 1
Bdellidae
Bdellodes sp.
Oribatida
Crotonioidea
indet. species
Brachychthonidae
Liochithonius australis Covarrubias
Metrioppiidae
Macquarioppia striata Wallwork
Oppiidae
Globoppia intermedia longiseta Wallwork
Globoppia loxolineata Wallwork
Austrooppia crozetensis Richters
Ameronothridae
Halozetes marinus Lohmann
Halozetes belgicae belgicae Michael
Halozetes belgicae brevipilis Wallwork
Halozetes marionensis Engelbrecht

ACARINA — Oribatida — Ameronothridae — *continued*

Halozetes intermedius Wallwork
Halozetes crozetensis Richters
Halozetes sp. nov.
Alaskozetes antarcticus antarcticus Michael
Alaskozetes antarcticus grandjeani Dalenius
Alaskozetes sp.
Podacarus auberti auberti Grandjean
Podacarus auberti occidentalis Wallwork
Astigmata
Acaridae
Tyrophagus putrescentiae Schrank
Algophagidae
Algophagus antarcticus Hughes
Algophagus semicollaris Fain
Hyadesiidae
Hyadesia kerguelensis Lohmann
Hyadesia halophila Fain
Hyadesia subantarctica Fain
Winterschmidtiidae
Neocalvolia sp. nov.
Neocalvolia kerguelensis Fain
Histiotomatidae
Austranoetus kerguelensis Fain
Pterolichidae
Thecarthra theca Megnin and Trouessart
Analgesidae
Alloptes aschizurus Gaud
Alloptes chionis Atyeo and Peterson
Avenzoaridae
Laronyssus marinus Trouessart
Laronyssus martini Trouessart
Proctophyllodidae
Microspalax manicata Megnin and Trouessart
Oxyalgus cardiurus Gaud and Atyeo
Oxyalgus incertus Gaud
ARANEIDA
Desidae
Myro kerguelensis Cambridge
MOLLUSCA
Charopidae
Notodiscus hookeri Reeve

Appendix 5

Coastal marine and littoral invertebrates recorded from Heard Island. This list is based on that compiled by Tonia Cochran (1995) in Heard Island Wilderness Reserve Management Plan, Australian Antarctic Division, Kingston, Tasmania, as amended in L. Meyer, A. Constable, and R. Williams (2000). Conservation of marine habitats in the region of Heard Island and McDonald Islands Report to Environment Australia. *Echinoderm species identified in 1999 by the Museum of Victoria.

PORIFERA

CALCAREA (CALCISPONGIAE)

Grantiidae

Leuconia joubini (Topsent)

HEXACTINELLIDA (HYALOSTONGIAE)

Rossellidae

Rossella antarctica Carter

DEMOSPONGIAE

Tetractinellida

Desmacidonidae

Iophon proximum (Ridley)

Tetillidae

Tetilla leptoderma Sollas

Suberitidae

Suberites caminatus Kirkpatrick

Keratosa

Dendrilla membranosa (Pallas)

CNIDARIA (COELENTERATA)

HYDROZOA

Hydroida/Leptomedusae

Schizotricha multifurcata Allman

Hydrocorallina/Stylasterina

Errina antarctica (Gray)

MOLLUSCA

POLYPLACOPHORA

Paleoloricata/Lepidopleurina

Hanleyidae

Hemiarthrum setulosum Dall

GASTROPODA

Prosobranchia

Archaeogastropoda

Patellidae

Nacella kerguelensis (Smith)

Patimigera macquariensis (Finlay)?

MOLLUSCA — GASTROPODA — continued

- Trochidae
Solaria charopus caeruleus (Watson)
Mesogastropoda
 Littorinidae
Laevithorina heardensis Dell
Pellitorina setosa (Smith)
Pellitorina pellita Martens (= *P. setosa*?)
Macquarrella hamiltoni (Smith)
 Omalogyridae
Omalogyra atomus atomus (Philippi)
 Struthiolariidae
Ferissodonta mirabilis (Smith)
 Naticidae
Amauropis prasina (Watson)
Neogastropoda
 Muricidae
Trophon abobabratus Smith
 Buccinulidae
Neobuccinum eatoni (Smith)
Chlamida vestita (Martens)
 Cancellariidae
Admete speculans (Watson)
 Turritidae
Typhlomangelia fluctosa Watson
BIVALVIA (PELECYPODA)
Pteromorphna/Arcoidea
 Limopsidae
Lissarca rubrifusca Smith
Limopsis mactronensis Smith
 Philobryidae
Philobrya laevis Thiele
Heterodonta/Veneroidea
 Kiamidae (Turtoniidae)
Kiamera bicolor (Martens)
 Gaimardiidae
Gaimardia trapestina trapestina (Lamarck)?
CEPHALOPODA
Coleoidea/Octopoda
 Octopodidae
Benthocotopus levis (Hoyle)
ARTHROPODA
CRUSTACEA
Ostracoda
Brachia simplex Stewardson Brady
Cythere kerguelensis Stewardson Brady
Cythere wyville-thomsoni Stewardson Brady
Cythere foveolata Stewardson Brady
Xestoleberis setigera Stewardson Brady
Cytheropleuron assimile Stewardson Brady
Cytheridella laevata Stewardson Brady
Sclerochilus confortus (Norman)
Ampiphilopoda/Gammaridea
 Gammarellidae
Pontogenia chirostrides (Nicholls)
 Hyalidae
Hyalis hirtipalma (Dana)
 Iphimediidae
Labrithemeda pulcherridentata (Siebbing)
 Lilioborgiidae
Liljeborgia consanguinea Siebbing
 Oedicerotidae
Oedicerotides rostratus (Siebbing)
 Eusiridae
Eusiroides pompeii Siebbing
BRZOZA
 GYMNOLEAFMATA/CHEILOSTOMATA
 Scrupocellariidae
Menpea quadrata (Busk)
- Bicornariidae
Cornucopina pectogemma (Goldstein)
Beania challengeri Hastings
Beania magellanica (Busk)
 Bugula longissima Busk
 Scrupariidae
Brettia normata (Goldstein)
 ? Family
Hippothoa flagellum Manzoni
Nellia oculata Busk
Membranipora crassimarginata var. *erecta* Hincks
Vincularia gothica var. *granulata* (d'Orbigny)
Salicornaria clavata Busk
Onchopora sinclairi Busk
Keleporella jabelata Busk
Cribrulina philomela var. *adnata* Busk
Schizoporella verruculata Smith
Escharoides verruculata Smith
Myrionum marionense Busk
Cellepora albostriata Smith
BRACHIOPODA
ARTICULATA
Terebratula nova Broderip
Notosaria nigricans (Watson)
Aerolithys kerguelensis (Davidson)
ECHINODERMATA
ASTEROIDEA
 Asteriidae
Anastarias mawsoni (Koehler)
Diplastarias meridionalis (Fertier)
Smilastarias scalprifera (Sladen)
Smilastarias tremus (Sladen)
 Asteriidae
Tremaster mirabilis Verrill
 Astropectinidae
Astropectin sp.*
Bathypelastias loripes (Sladen)
Bathypelastias loripes var. *obesa* (Sladen)
Lepthyphaster kerguelensis Stewardson Smith
 Benthopectinidae
Cherastier (Laudastier) hirsutus (Studer)
 Echinasteridae
Hemria simplex (Sladen)
Hemria spinulifera Smith
Rhopella hirsuta (Koehler)
 Ganeriidae
Cyathra verrucosa (Philippi)
Perknaster fuscus (Sladen)
 Gonistasteridae
Hippasteria falklandica Fisher
 Labidiasteridae
Labidiaster annulatus (Sladen)
 Odonistasteridae
Acodontaster elongatus (Sladen)
Odomontaster meridionalis Smith
 Odontasteridae
Porania antarctica Smith
Porania antarctica glabra Sladen
 Perasteridae
Peraster affinis (Smith)
Peraster rugatus Sladen
 Solasteridae
Solaster regularis Sladen
 CRINOIDEA
 Antedonidae
Antedon australis Carpenter
Promachocrinus kerguelensis Carpenter
ECHINOIDEA
 Cidaridae
Ctenocidaris nutrix (W. Thomson)

Appendix 5 — continued

ECHINODERMATA — ECHINOIDEA — Cidaridae — cont.

Ctenocidaris speciosa Mortensen
Goniocidaris canaliculata (A. Agassiz)

Echinidae

Dermechinus horridus (A. Agassiz)
Strechinus agassiz Mortensen
Strechinus diadema (Studer)

Euechinoidea

Echinacea/Echinoida

Echinus margaritaceus (Lamarck)

Atelostomata/Holasteroidea

Pourtalesia carinata (A. Agassiz)
Pourtalesia ceratopyga (A. Agassiz)
Hemiasiter cavernosus (A. Agassiz)

Schizasteridae

Abatus cordatus (Verrill)
Tripylus excavatus Koehler

HOLOTHUROIDEA

Chiridotidae

Trochodota purpurea (Lesson)

Cucumariidae

Cucumaria kerguelensis (Theel)
Cucumaria godeffroyi Semper
Cucumaria laevigata (Verrill)
Cucumaria serrata Theel
Cucumaria serrata var. *intermedia* Theel
Pseudocnus laevigatus (Verrill)
Pseudocnus sp.*
Trachythyone lechleri (Lampert)
Trachythyone mira (Ludwig and Hedding)

Dendrochirotida

Thyone muricata (Studer)
Pseudocnus laevigatus

Molpadiidae

Molpadia musculus (Risso)

Psolidae

Psolidium incertum (Theel)
Psolus sp.*
Psolus ephippifer Thomson
Psolus paradubiosus Carriol and Feral

OPHIUROIDEA

Amphiuridae

Amphiura angularis angularis Lyman
Amphiura eugeniae antarctica Studer
Amphiura sp.*

OPHIUROIDEA — Amphiuridae — continued

Amphiura studeri (Lyman)
Amphiura tomentosa Lyman
Pandelia angularis
Asteronychidae
Asteronyx loveni (Muller and Troschel)

Gorgonocephalidae

Astrotoma agassizii (Lyman)
Gorgonocephalus chilensis (Philippi)
Gorgonocephalus pourtalesii (Lyman)

Ophiacanthidae

Ophiacantha imago Lyman
Ophiacantha sp.*
Ophiacantha vivipara Ljungman
Ophiomitrella sp.*
Toporkovia antarctica (Lyman)

Ophiolepidae

Ophiolepis carinata (Studer)
Ophioglypha deshayesi (Lyman)

Ophiomyxidae

Ophiomyx nutrix

Ophiuridae

Ophiocten amitinum (Lyman)
Ophiomisidium speciosum Koehler
Ophiocten hexactis (Smith)
Ophiura (Ophiuroglypha) carinifera (Koehler)
Ophiura ambigua Lyman
Ophiura brevispina (Smith)
Ophiura sp. 1*
Ophiura sp. 2*
Ophiurolepis carinata (Studer)

CHORDATA

Hemichordata/Pterobranchia

Cephalodiscus sp.

Urochordata/Ascidacea

Styelidae

Polyzoa opuntia Lesson

Distomidae

Colella pedunculata (Quoy and Gaimard)

?Family

Aplidium irregulare
Ascidia challengerii
Didemnum studeri
Hypsistozoa fasmeriana
Sycozoa sigillinoides

Appendix 6

Birds of Heard Island and the McDonald Islands. Species are listed as breeding or non-breeding (seen by shore parties or observed within the 200 nautical mile Heard Island Exclusive Economic Zone). No passerines have been recorded from Heard Island and the McDonald Islands. IUCN categories are provided where species meet criteria (BirdLife International 2000).

BREEDING SPECIES

King Penguin *Aptenodytes patagonicus*
Gentoo Penguin *Pygoscelis papua*
Macaroni Penguin *Eudyptes chrysolophus* [Vulnerable]
Rockhopper Penguin *Eudyptes chrysocome* [Vulnerable]
Wandering Albatross *Diomedea exulans* [Vulnerable]
Black-browed Albatross *Thalassarche melanophrys* [Vulnerable]
Light-mantled Sooty Albatross *Phoebastria palpebrata*
Southern Giant Petrel *Macronectes giganteus* [Vulnerable]
Cape Petrel *Diapton capense*
Antarctic Prion *Pachyptila desolata*
Fulmar Prion *Pachyptila crassirostris*
Common Diving Petrel *Pelecanoides urinatrix*
South Georgian Diving Petrel *Pelecanoides georgicus*
Wilson's Storm Petrel *Oceanites oceanicus*
Heard Island Shearbill *Chionis minor nasicornis*
Kelp Gull *Larus dominicanus*

Subantarctic Skua *Catharacta lonnbergi*

Antarctic Tern *Sterna vittata*

Heard Island Cormorant *Phalacrocorax nivalis* [Vulnerable]

NON-BREEDING SPECIES OBSERVED ON SHORE OR WITHIN THE HIMI EEZ

Emperor Penguin *Aptenodytes forsteri*

Adélie Penguin *Pygoscelis adeliae*

Chinstrap Penguin *Pygoscelis antarctica*

Southern Royal Albatross *Diomedea epomophora* [Vulnerable]

Yellow-nosed Albatross *Thalassarche chlororhynchus* [Vulnerable]

Grey-headed Albatross *Thalassarche chrysostoma* [Vulnerable]

Sooty Albatross *Phoebastria fusca* [Vulnerable]

Northern Giant Petrel *Macronectes halli*

Southern Fulmar *Fulmarus glacialisoides*

Antarctic Petrel *Thalassoica antarctica*

Snow Petrel *Pagodroma nivea*

