



## Annual distribution of *Xiphophora gladiata* lineage

In New Zealand waters *Xiphophora gladiata* (Labill.) Mont. is found around the southern North Island and on the South, Chatham, Stewart, Snares, Antipodes, Auckland, and Campbell Islands (Rice 1989, Adams 1994, Neale & Nelson 1998, Nelson et al. 2002). It was first described from Tasmania, Australia and has been collected once from Victoria (Womersley 1987).

### 1. Literature sources

The literature was searched for distributional information for the brown kelp *X. gladiata*.

- a. A search was carried out of the following databases: Te Puna using the keywords "*Xiphophora gladiata* + Zealand+geograph? (+distribut?)" (16/09/2005); Aquatic Sciences and Fisheries Abstracts "*Xiphophora gladiata* and zealand and (geograph\* or distribut\*)" (16/09/2005); Web of Science "TS=(*Xiphophora gladiata* and zealand and (geograph\* or distribut\*))" (15/09/2005); Scopus "title-abs-key ("*Xiphophora gladiata*" and zealand and (geograph\* or distribut\*))" (16/09/2005); Google Scholar "zealand geographic or distributed or distribution *Xiphophora gladiata*" (19/09/2005). From all these sources a number of paper citations were located (Web of Science = 11, Google scholar = 3)
- b. Using subject indices, *Seafood New Zealand* was checked for articles dealing with *Xiphophora gladiata* and research.
- c. A search of NIWACAT in September 2005 produced no records that contributed additional distribution information for this species.

### 2. Ministry of Fisheries electronic databases

There are no data held for *Xiphophora gladiata*.

### 3. Museum holdings

Holdings of *X. gladiata* were examined at WELT, the herbarium of the Museum of New Zealand Te Papa Tongarewa, CHR (Landcare Research herbarium), AK (Auckland Museum herbarium, including the herbarium of Auckland University), and in the algal research collections at NIWA. Data were used to help estimate presence/absence.

### 4. Summary

*Xiphophora gladiata* grows from the low intertidal zone (from about 0.5 m below high tide level, depending on location), extending subtidally to about 10 m, on moderate to very exposed rocky shores. The strap-like grey-

brown thalli of this species are very distinctive and enable this species to be readily identified.

The 90% distribution has been overlaid on the 100% distribution and has been extended to link headlands or subtidal reef areas where this species has been recorded and/or where equivalent habitats occur.

The above information on the distribution of *X. gladiata* derived primarily from herbarium collections, was reviewed by Dr Murray Parsons, former Keeper Landcare Herbarium, and then integrated by hand onto a large-scale map of New Zealand. The shoreline distributions were then digitised and imported into a GIS software package as layers. The areas of each distribution class were calculated and the layers were linked to attribute and metadata files. The map, because of its scale, cannot be taken to accurately define the local distribution of this species.

## 5. References

The following publications were the key references and/or the ones most useful in describing the recent/current annual distribution of *X. gladiata*. The list is not intended to be an exhaustive bibliography of publications about this species.

- Adams, N.M. (1994). Seaweeds of New Zealand. Canterbury University Press. 360 p.
- Neale, D.; Nelson, W.A. (1998). Marine algae of the West Coast, South Island, New Zealand. *Tuhinga 10*: 87–118.
- Nelson, W.A.; Villouta, E.; Neill, K.; Williams, G.C.; Adams, N.M.; Slivsgaard, R. (2002). Marine macroalgae of Fiordland. *Tuhinga 13*: 117–152.
- Rice, E.L. (1989). A statistical morphological analysis and taxonomic revision of the genus *Xiphophora* (Fucaeeae). *Journal of the Linnaean Society of Canada, Botany 100*: 355–387.
- Womersley, H.B.S. (1987). The marine benthic flora of Southern Australia. Part II. Government Printer, Adelaide. 484 p.