VI.4. BENTHIC FAUNA
VI.4a. The Bryozoa and Coelenterata

CLAUDE DEJOUX

The Bryozoa

The Bryozoa of Lake Titicaca, a minor component of the benthic fauna of this water body, are only known from the work of Marcus (1953) relating to material collected by the Percy Sladen Expedition of 1937, and which will be frequently cited in this book.

These rather unspectacular and usually small-sized organisms have rarely been collected and are not always capable of being identified. Identification is generally based on the structure of the statoblasts, but these organs are not always present in collected material.

Systematics and distribution

Only two species have been recorded from Lake Titicaca, or rather two subspecies of polyps with a much wider distribution either on a world scale or within South America.

Fredericella australiensis var. *browni* Rogick, 1945

The material studied by Marcus (1953) was recorded as being abundant and came from the Capachica region, where this species was found in small streams around the shoreline (under stones) as well as in the lake itself under pebbles along the shoreline or on the stems of *Schoenoplectus tatora*. Depending on their stage of growth, their age and type of substrate, the colonies can either form appressed grey-brown incrustations of 2 to 3 cm diameter, or the polyps can be erect and form a rather graceful feathery structure (Plate 1, Fig. 1 to 9).

The polyp tubes have a structure ranging from an elliptical form to a nearly triangular form. The mean size of polyps varies widely, the largest reaching 1.5 to 2.3 mm; the tentacles vary between 0.4 and 0.9 mm in length, and number between 24 and 27 per polyp. Statoblasts are numerous, but

C. Dejoux and A. Iltis (eds.), Lake Titicaca, 289–294.

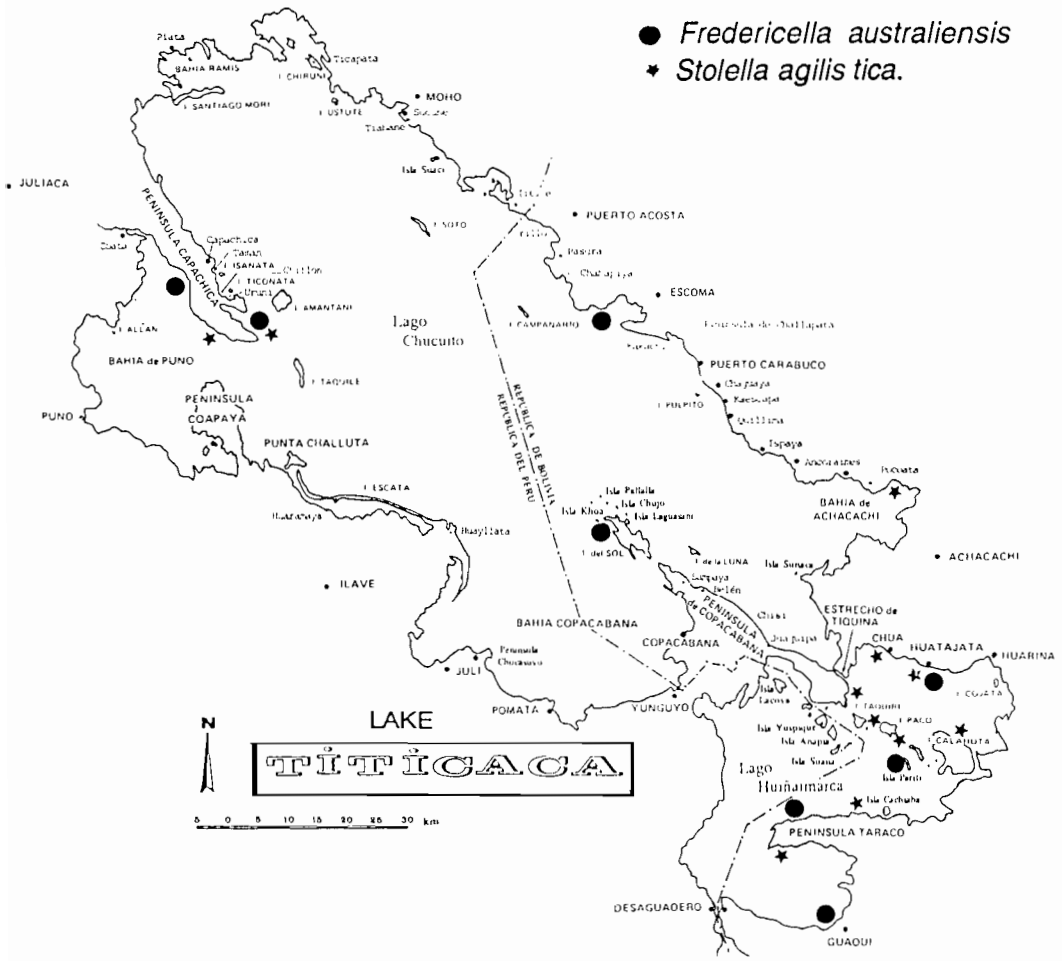

Figure 1. Known distribution of Bryozoa in Lake Titicaca.

flottoblasts are absent, a characteristic feature of the Fredericellidae. Marcus (*op.cit.*) named these non-floating statoblasts, piptoblasts.

Fredericella australiensis var. *browni* is a taxon very close to *Fredericella sultana*, but differs mainly by the greater diameter of the tubes in which dissepiments are absent, by the larger number of tentacles arranged in an elliptical rather than circular form and by its larger sessoblasts.

Fredericella australiensis is a cosmopolitan species recorded from Australia, Russia, the central Sahara and North America. The variety occurring in Lake Titicaca is distributed widely in the water body and has been recorded under stones or among vegetation on the shore of Lago Huiñaimarca (Huatajata, Taquiri, Suana, Cojata, etc.) and in Lago Grande (Achacachi, Escoma, Copacabana, etc.) (Fig. 1). It should be noted that only isolated individuals

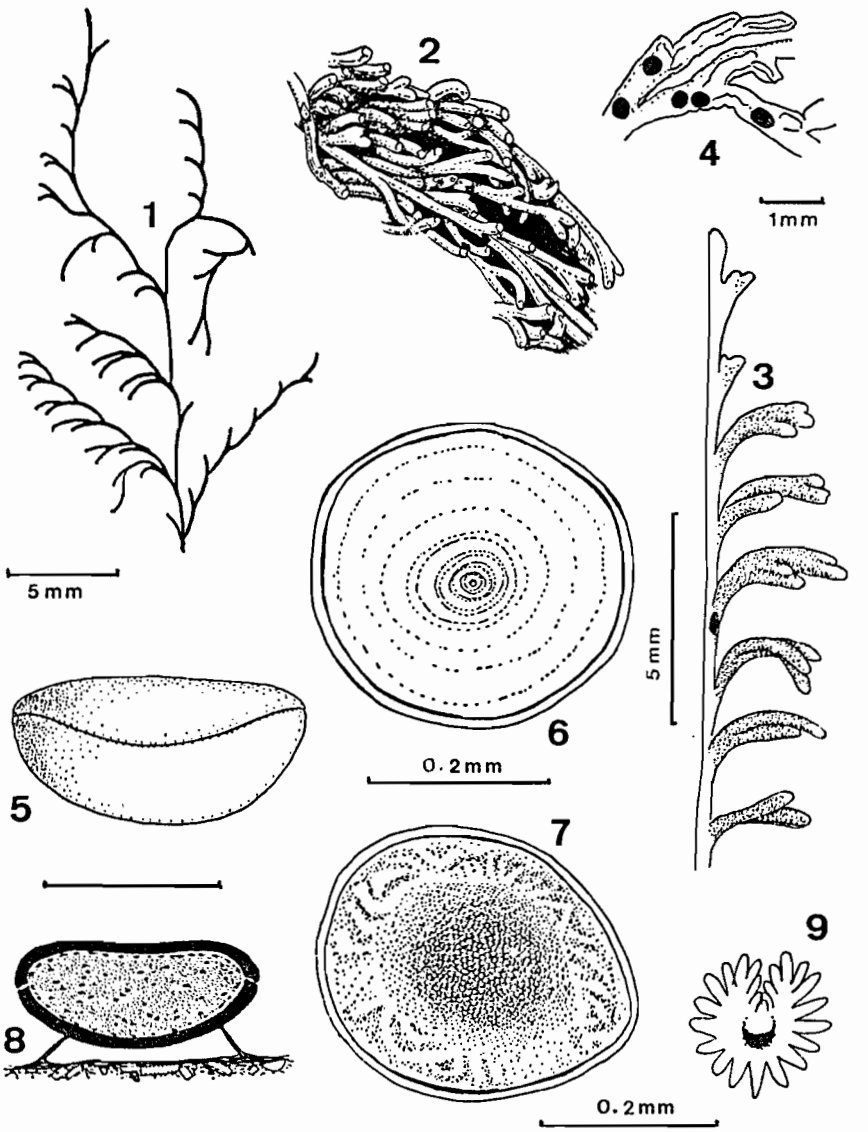

Plate 1. Fredericella australiensis browni: 1. part of a colony growing on algae; 2. centre of an old colony growing on a rock; 3. detached branch of a polypide with erect zooecia; 4. part of a cleared colony showing piptoblasts; 5. lateral view of a piptoblast; 6. upper valve of a piptoblast; 7. lower valve of a piptoblast; 8. section of a sessoblast; 9. crown of tentacles from a young polypide. (From Marcus, 1953).

have been collected at these stations, giving the impression that this organism is rare.

Stolella agilis Marcus, 1942

Stolella agilis tica Marcus, 1953

The material collected comes mainly from macrophyte beds of *Elodea*, *Potamogeton* and *Myriophyllum* to which the polyps are attached. The colonies are often found encrusting shells of *Littoridina*. As with previous sub-species it has been recorded from the Capachica region.

The structure of the polyp is much more slender than in *Fredericella* (Plate 2, Figs 1 to 7). The polypides are grouped into clusters of 3 or 4 separated by septa and can break away from their attachment, probably in a stage of extension of the colony towards another substrate.

The tubes of zooecia are not angular but cylindrical with a diameter of 0.6 to 0.8 mm, the zooecia themselves being of very variable size. The ectocyst is thin and transparent with a diameter of 20 to 60 μm and showing two distinct layers in section (Plate 2, Fig. 6), the outside often being incrusted with debris and fragments of diatoms arranged in concentric lines.

The polyps have a very variable number of tentacles, difficult to count with certainty because of the folded form of the lophophore, but varying from 28 to 43 in the samples studied, with a mode of 35. The colonies contain few statoblasts and no sessoblasts.

The variety *Stolella agilis tica* appears to be a form intermediate between *Stolella agilis agilis* and *Stolella agilis iheringi*, differing in characters of size and shape, especially in the flottoblasts and by internal morphological characters of the endocyst and vestibulum. *Stolella agilis agilis* is a sub-species known only from South America (southern and central regions) whereas the sub-species *Stolella agilis iheringi* is only recorded from northern Brazil. In Lake Titicaca we have only found it once on the stems of *Myriophyllum* near Calahuta Island, which suggests that this subspecies is rarer than the previous one. In the material collected by the Percy Sladen Trust Expedition, the examples of *Stolella agilis tica* were collected in the Lagunilla Lagunilla lake situated to the west of Lake Titicaca, living at depths of between 12 and 24 metres. It is not impossible that these organisms also occur at the same depths in Lake Titicaca, despite the fact that we have never collected them ourselves at more than about 12 metres depth.

The coelenterata

Although very frequent in freshwaters, the South American Coelenterata, including both medusae and hydroids, have only been the subject of very few studies, restricted to taxa from the Amazon Basin (Schlenz, 1981).

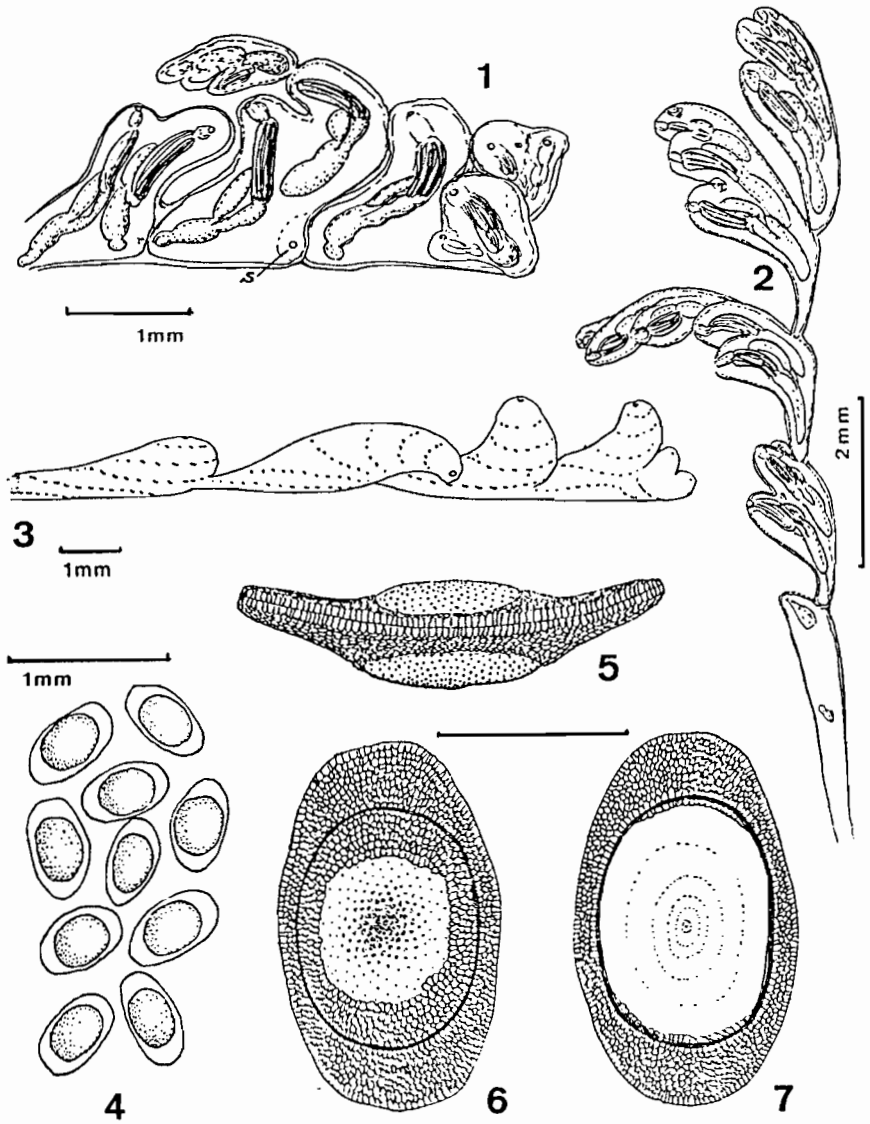

Plate 2. Stolella agilis tica: 1. isolated fragment of a colony showing septa; 2. extended part of a budding colony; 3. creeping branch of a polyp incrusted with foreign particles on its surface; 4. general appearance of flottoblasts treated with KOH; 5. lateral view of a flottoblast after KOH treatment; 6. view of upper surface; 7. view of lower surface. (From Marcus, 1953).

It seems highly probable that only one species of Coelenterata belonging to the genus *Hydra* occurs in Lake Titicaca, but it has not been possible to identify this to species level (Fig. 2). It is frequently present in our benthos samples and below we give a brief summary of its distribution in the Bolivian part of the lake.

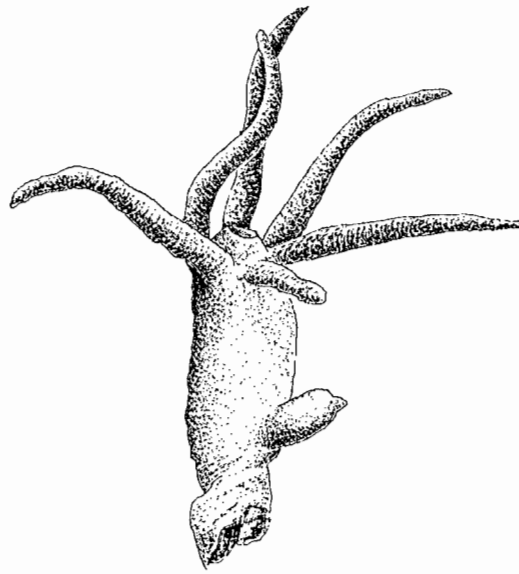

Figure 2. Polyp of *Hydra* sp. from Lake Titicaca.

Within this area the highest relative abundance (more than 33% of the benthic fauna in this zone) has been recorded on bare bottom substrates in Lago Huiñaimarca. This organism lives on compact sandy-silt substrates, at depths of thirty metres or more near the entrance to the Tiquina Strait and at lower abundance in the Chua Depression. Its presence in these localities is an argument in favour of the existence of deep-water currents, bringing oxygen and food. These are certainly two factors determining the abundance of *Hydra* that we have also found off the mouth of the Rio Suchez in Lago Grande (depth 8 to 15 m; % of total benthos: 20%).

Hydra sp. is a regular component of the fauna in areas covered with charophytes in Huiñaimarca and Lago Grande, where it represents 5 and 10% of the total macro-invertebrates present, respectively. Absolute densities exceeding 1500 individual per 10 g dry weight of these plants have been encountered on occasion, but densities of 400 to 500 are more frequent.

The *Hydra* sp. occurring in Lake Titicaca is small and of extremely low dry weight and therefore represent a negligible proportion of the biomass, but its nature as filter-feeding organism gives it a certain importance in the processes of organic matter transformation.

References of chapter VI.4

ANNANDALE (N.), 1913. An account of the Sponges of the Lake Tiberias with observations on certain genera of Spongillidae. *Journ. proc. Asiatic Soc. Bengal.*, 9: 57–88.

ARNDT (W.), 1937. *Ochridaspongia rotunda* n.g., n. sp. Ein neuer Süsswasserschwam aus dem Ochridasee. *Arch. Hydrobiol.*, 31: 636–677.

BACHMANN (A.O.), 1961. Notas sobre Corixidae (Hemiptera) (2a seria). *Neotropica*, 7: 19–24.

BACHMANN (A.O.), 1962. Clave para determinación de las subfamilias, géneros y especies de las Corixidae de la República de Argentina (Insecta, Hemiptera). *Physis*, 23: 21–25.

BATE (J.), 1862. *Allochertes knickerbrockeri*. Cat. Amph. Crust. Brit. Mus., p. 136.

BAVAY (A.), 1904. Mission de Créqui-Montfort et Sénéchal de la Grange en Amérique du Sud. Mollusques terrestres et fluviatiles récoltés par le Dr. Neveu-Lemaire. *Bull. Soc. Zool. Fr.*, 29: 152–156.

BAVAY (A.), 1906. Mollusques. *In*: Les lacs des hauts plateaux de l'Amérique du Sud. Neveu-Lemaire. Imprimerie nationale, Paris: 142–147.

BEAUCHAMP (P. de), 1939. 5. Rotifères et Turbellariés. *In*: The Percy Sladen Trust Expedition to Lake Titicaca in 1937. *Trans. Linn. Soc. London*, ser. 3, 1 (1): 44–79.

BLUME (W.), 1958. Littoridinen aus dem Titicacasee (Mollusca). *Op. Zoologica*, 25: 1–8.

BRIEN (P.), 1958. A propos de deux éponges du lac Tanganyika. *Mém. Acad. r. Scienc. colon.*, 8 (1): 1–43.

BRIEN (P.), 1972. *Malawispongia echinoides* n.g., n. sp. Eponge Céractinelle Haplosclérideafricaine du lac Malawi (Formation de la spongine périspiculaire). *Rev. Zool. Bot. Afr.*, 86 (1–2): 65–92.

BRIEN (P.), 1973. *Malawispongia echinoides* Brien. Etudes complémentaires. Histologie. Sexualité. Embryologie. Affinités systématiques. *Rev. Zool. Bot. Afr.*, 87 (1): 50–76.

BRULLE (G.A.), 1837. Insectes de l'Amérique méridionale recueillis par Alcide D'Orbigny. *In* : Voyage dans l'Amérique méridionale. A. D'Orbigny. Pitois-Levrault et Cie., Paris, 2 (2): 17–56.

BRUNDIN (L.), 1956. Die bodenfaunistischen Seetypen und ihre Anwendbarkeit auf die Sudhalbkugel. Zugleich ein Theorie der produktionbiologischen Bedeutung der glazialen Erosion. Rep. Inst. Freshw. Res., Drottningholm, 37: 186–235.

BULLA (L.A.), 1972. La ninfa de *Protallagma titicacae* (Calvert). *Neotropica*, 18 (57): 129–135.

CALVERT (P.P.), 1909. Contribution to the knowledge of the Odonata of the Neotropical region. *Ann. Carn. Mus.*, 6: 73–364.

CARMOUZE (J.P.), ARZE (C.), QUINTANILLA (J.), 1977. La régulation hydrique des lacs Titicaca et Poopo. *Cah. ORSTOM, sér. Hydrobiol.*, 11 (4): 269–283.

CARMOUZE (J.P.), ARZE (C.), QUINTANILLA (J.), 1981. Régulation hydrochimique du lac Titicaca et l'hydrochimie de ses tributaires. *Rev. Hydrobiol. trop.*, 14 (4): 329–348.

CARMOUZE (J.P.), DEJOUX (C.), DURAND (J.R.), GRAS (R.), ILTIS (A.), LAUZANNE (L.), LEMOALLE (J.), LEVEQUE (C.), LOUBENS (G.), SAINT-JEAN (L.), 1972. Grandes zones écologiques du lac Tchad. *Cah. ORSTOM, sér. Hydrobiol.*, 6 (2): 103–169.

CERNOSVITOV (L.), 1939. 6. Oligochaeta. *In* : The Percy Sladen Trust Expedition to Lake Titicaca in 1937. *Trans. Linn. Soc. London*, ser. 3 (1): 81–116.

CHEVREUX (E.), 1904. Mission de Créqui-Montfort et Sénéchal de la Grange; note préliminaire sur les Amphipodes recueillis par M. le Dr. Neveu-Lemaire dans le lac Titicaca (juillet 1903). *Bull. Soc. Zool. de Fr.*, 29 (11): 131–134.

DEJOUX (C.), 1988. Panorama de la fauna béntica del Altiplano boliviano. Congreso Iberoamericano y del Caribe sobre la pesca y la acuicultura, Isla Margarita, Venezuela, 8–14 Mayo 1988: 13 p., multigr.

DEJOUX (C.), 1991. Les macro-invertébrés associés à la végétation aquatique dans la partie bolivienne du lac Titicaca. *Rev. Hydrobiol. trop.* 24 (2): 91–104.

DEJOUX (C.), MOURGUIART (P.), 1991. *Ecpomastrum mirum* (Mollusque Hydrobiidae) du lac Titicaca: un problème de taxinomie. *Bull. Mus. Nat. Hist. Nat.* (in press).

DEJOUX (C.), WASSON (J.G.), 1991. La faune benthique de quelques lacs d'altitude des Andes boliviennes. *Spixiana* (in press).

DELACHAUX (T.), 1928. Faune invertébrée d'eau douce des hauts plateaux du Pérou (région de Huancavelica, département de Junin). (Calanides, Ostracodes, Rotateurs nouveaux). Trav. Lab. Zool. Univ. Neuchâtel: 45–99.

D'ORBIGNY (A.), 1835. *Synopsis terrestrium et fluviatilium Molluscorum in suo per Amirican meridionalem itinere collectarum. Mag. Zool.*, 5 (61): 44 p.

D'ORBIGNY (A.), 1835–47. Mollusques. *In*: Voyage dans l'Amérique méridionale. A. D'Orbigny. Pitois-Levrault et Cie., Paris, vol. 5.

D'ORCHYMONT (A.), 1941. Palpicornia (Coleoptera). Notes diverses et espèces nouvelles. *Bull. Mus. Roy. Hist. Nat. Belg.*, 17 (1): 1–23.

DOS SANTOS (N.D.), 1966. Notas sobre *Aeschna* (*Hesperaeschna*) *peralta* Ris, 1918 e sua ninfa. *Actas Soc. Biol. Rio de J.*, 10 (5): 123–124.

FAXON (W.), 1876. Exploration of Lake Titicaca by Alexander Agassiz and S.W. Garman. 4. Crustacea. *Bull. Mus. Comp. Zool. Cambridge*, 3 (16): 361–375.

FLINT (O.S.), 1982. Studies of neotropical caddisflies, 30: larvae of the genera of South American Limnephilidae (Trichoptera). *Smith. contrib. to zool.*, 355: 30 p.

FRASER (F.C.), 1957. A revision of the Odonata of Chile. *An. Acad. Chil. Cienc. Nat.*, 21 (2): 153–166.

GAVRILOV (K.), 1981. Oligochaeta. *In*: Aquatic biota of Tropical South America, Part 2: Anarthropoda, Hurlbert, Rodríguez & Santos eds., San Diego State University, San Diego, California: 170–190.

GERMAR (E.F.), 1824. *Insectorum species novae aut minus cognitae, descriptionibus illustratae. Halae*, 624 p.

GILSON (H.C.), 1937. 1. Description of the expedition. *In*: The Percy Sladen Trust Expedition to Lake Titicaca in 1937. *Trans. Linn. Soc. London*, ser. 3, 1: 1–20.

GILSON (H.C.), 1964. Lake Titicaca. *Verh. Internat. Verein. Limnol.*, 15: 112–127.

GUIGNOT (F.), 1957. Beiträge zur Kenntnis der Insektenfauna Boliviens. *Opusc. Zool.*, 6: 1–10.

HAAS (F.), 1955. 17. Mollusca: Gastropoda. *In*: The Percy Sladen Trust Expedition to Lake Titicaca in 1937. *Trans. Linn. Soc. London*, ser. 3, 1 (3): 275–308.

HAAS (F.), 1957. Eine neue endemishe Schnecke aus dem Titicacasee. *Arch. Moll.*, 86 (4/6): 137–139.

HARMAN (W.J.), BRINKHURST (R.O.), MARCHESE (M.), 1988. A contribution to the taxonomy of the aquatic oligochaeta (Naididae) of South America. *Can. J. Zool.*, 66: 2233–2242.

HINTON (H.E.), 1940. 7. The Peruvian and Bolivian species of *Macrelmis Motsh.* (Coleoptera: Elmidae). *In* : The Percy Sladen Trust Expedition to Lake Titicaca in 1937. *Trans. Linn. Soc. London*, ser. 3, 1 (1): 117–147.

HUNGERFORD (H.B.), 1948. The Corixidae of the western hemisphere (Hemiptera). *Univ. Kansas Sci. Bull.*, 32: 4–827.

HYMAN (L.H.), 1939. New species of flat worms from North, Central and South America. *Proc. U.S. Nat. Mus.*, 86: 419–439.

KENNEL (J.), 1888. Untersuchungen an neuen Turbellarien. *Zool. Jb. (Syst.)*, 3: p. 444.

KUIPER (J.G.), HINZ (W.), 1983. Zur Fauna der Kleinmuscheln in den Anden (Bivalvia: Sphaeriidae). *Arch. Moll.*, 114 (4/6): 137–156.

LAVENU (A.), 1981. Origine et évolution néotectonique du lac Titicaca. *Rev. Hydrobiol. trop.*, 14 (4): 289–297.

LAZZARO (X.), 1985. Poblaciones, biomasas y producciones fitoplanctónicas del lago Titicaca. *Rev. Inst. Ecol.*, La Paz, 7: 23–64.

LERNER-SEGEEV (R.), 1971. *Limnocythere titicaca* new species (Ostracoda, Cytheridae) from Lake Titicaca, Bolivia. *Crustaceana*, 25 (1), 88–94.

LUNDBLAD (O.), 1924. Über einige Hydracarinen aus den peruanischen Anden. *Göteborg. VetenskSamh. Handl.* (S 4), 27 (10): 1–25.
LUNDBLAD (O.), 1930. Südamerikanische Hydracarinen. *Zool. Bidr. Upsala*, 13: 1–86.
LUNDBLAD (O.), 1944. Einige neue und venid bekannte Hydracarinen aus Südamerica. *Ent. Tidskr.*, 65: 135–162.
MARCUS (E.), 1942. Sobre Bryozoa do Brasil. II. Bol. Fac. Fil. Ci. Letr. Univ. Sao Paulo. Zool., 6 (1–5): 57–106.
MARCUS (E.), 1953. Bryozoa from Lake Titicaca. Bol. Fac. Fil. Ci. Letr. Univ. Sao Paulo, Zool., 18: 45–49.
MARTINEZ-ANSEMIL (E.), GIANI (N.), 1986. Algunos oligoquetos acuáticos de Bolivia. *Oecol. aquat.*, 8: 107–115.
MEDINA (C.), 1982. Determination of zoobenthos in Puno Bay of Lake Titicaca (Ojerani). *In*: Physical, chemical and biological conditions relating to water quality in Puno Bay, Lake Titicaca; Seminar abstracts, 32 p., multigr.
MEDINA (C.), 1983a. Determinación de la fauna bentónica en Ojerani. Tesis UNTA, Puno: 116 p.
MEDINA (C.), 1983b. Fauna bentónica en la bahía de Puno-Ojerani. UNDAP, Puno: 4 p., multigr.
MILBRINK (G.), 1983. An improved environmental index based on the relative abundance of Oligochaete species. *Hydrobiologia*, 102: 89–97.
MONIEZ (R.), 1889. Sur quelques Cladocères et sur un Ostracode nouveaux du lac Titicaca. *Rev. Biol. Nord France*, 1: 419–429.
MORALES (P.), CORNEJO (E.), LEVY (D.A.), CHALLCO (D.), MEDINA (A.C.), NORTHCOTE (T.G.), 1989. Effects of eutrofication on zoobenthos. *In*: Pollution in Lake Titicaca, Peru. Northcote, Morales, Levy, Greaven eds., Westwater Research Centre, Univ. Brit. Columbia, Vancouver: 101–113.
MOUCHAMPS (R.), 1963. Beiträge zur Kenntnis Insektenfauna Boliviens. 18. Coleoptera, 14. Sur quelques Berosini (Coleoptera-Hydrophilidae) de l'Amérique du Sud. *Mitt. Münchner Ent. Gesell.*, 53: 118–149.
MOURGUIART (P.), 1987. Les Ostracodes lacustres de l'Altiplano bolivien. Le polymorphisme, son intérêt dans les reconstitutions paléohydrologiques et paléoclimatiques de l'Holocène. Thèse Univ. Bordeaux 1, 263 p.
NORTHCOTE (T.G.), MORALES (P.S.), LEVY (D.A.), GREAVEN (M.S.), 1989. Pollution in Lake Titicaca, Peru: training, research and management. Westwater Research Centre, Univ. Brit. Columbia, Vancouver, 262 p.
PHILIPPI (R.A.), 1889. *Diagnoses molluscorum terrestrium et fluviatilium peruanorum. Malak. Bl.*, 16: 32–49.
PILSBRY (H.A.), 1924. South American land and freshwater mollusks. Notes and descriptions. I. Mollusks of Lake Titicaca. *Proc. Acad. Nat. Sci. Philad.*, 76: 49–51.
PILSBRY (H.A.), 1925. Lake Titicaca mollusks. *Nautilus*, 38: 103–104.
PILSBRY (H.A.), VANATTA (E.G.), 1896. New species of freshwater mollusks from South America. *Proc. Acad. Nat. Sci. Philad.*: 561–565.
RIBAGA (A.), 1902. *Acari sudamericani. Zool. Anz.*, 25: 502–508.
RINGUELET (R.A.), 1960. Una colección de hirudíneos del Perú. I. Sanguijuelas del lago Titicaca. *Physis*, 21 (61): 231–239.
RINGUELET (R.A.), 1978. Nuevos géneros y especies de Glossiphoniidae sudamericanos basados en caracteres ecto y endosomáticos (Hirudinea Glossiphoniiformes). *Limnobios*, 1 (7): 269–276.
RINGUELET (R.A.), 1981. Hirudinea. *In*: Aquatic biota of tropical South America. Part 2. Anarthropoda. Hurlbert, Rodríguez and Dos Santos, eds: 191–196.
ROBACK (S.S.), BERNER (L.), FLINT (O.S.), NIESER (N.), SPRANGLER (P.J.), 1980. Results of the Catherwood Bolivian-Peruvian Altiplano Expedition. Part 1. Aquatic insects except Diptera. *Proc. Acad. Nat. Sci. Philadelphia*, 132: 176–217.
ROBACK (S.S.), COFFMAN (W.P.), 1983. Results of the Catherwood Bolivian-Peruvian

Altiplano Expedition. Part 2. Aquatic Diptera including montane Diamesinae and Orthocladiinae (Chironomidae) from Venezuela. *Proc. Acad. Nat. Sci. Philadelphia*, 135: 9–79.

ROGICK (M.D.), 1945. Studies on freshwater Bryozoa. 16. *Fredericella australiensis* var. *browni*, n. var. *Biol. Bull.*, Woods Hole, 89 (3): 215–228.

RÜTZLER, (K.), 1978. Sponges in coral reefs. *In*: Coral Reefs: Research Methods. Monographs on Oceanographic Methodology, D. R. Stoddart and R. E. Johannes (eds.), UNESCO, 5 (21), pp. 299–313.

SCHINDLER (O.), 1955. Limnologische Studien im Titicacasee. *Arch. Hydrobiol.*, 51 (1): 42–53.

SCHLENZ (E.), 1981. Coelenterata. *In*: Aquatic biota of tropical South America. Part 2. Anarthropoda. Hurlbert, Rodríguez and Dos Santos, eds., San Diego State Univ., San Diego: 96–97.

SCHMIDT (F.), 1957. Contribution à l'étude des Trichoptères néotropicaux, II (Trichoptera). *Beitr. zur Ent.*, 7 (3–4): 379–398.

SMITH (J.), 1874. *Hyalella inermis*. Rep. U.S. Comm. for 1872 and 1873, p. 609.

SOLÉ-CAVA, (A.M.), KLAUTAU, (M.), BOURY-ESNAULT, (N.), BOROJEVIC (R.), and THORPE, (J.P.), 1991. Genetic evidence for cryptic specification in allopatric populations of two cosmopolitan species of the calcareous sponge genus *Clathrina*. *Marine Biology*, 111: 381–386.

TIMM (T.), 1970. On the fauna of the Estonian Oligochaeta. *Pedobiologia*, 10: 52–78.

TIMM (T.), 1990. Aquatic Oligochaeta from the farthest South-East of the USSR. *Proc. Estonian Acad. Sci. Biol.*, 39 (1): 55–67.

VARGAS (C.), 1982. La sédimentation lacustre subactuelle d'un bassin intramontagneux: le lac Titicaca (partie lac Huiñaimarca-Bolivie). Thèse Univ. Bordeaux 1: 91 p.

VIETS (K.), 1953. Neue Wassermilben aus Peru. *Veroff. Ubersee-Mus.* Bremen, (A), 2: 129–134.

VIETS (K.), 1955. 16. Hydrachnellae. *In* : The Percy Sladen Trust Expedition to Lake Titicaca in 1937. *Trans. Linn. Soc., London*, ser. 3, 1 (3): 249–274.

WALTER (C.), 1919. Hydracarinen aus der peruanischen Anden und aus Brasilien. *Rev. Suisse Zool.*, 27 (2): 19–59.

WECKEL (A.L.), 1907. *Hyalella knickerbrockeri*. *Proc. U.S. Nat. Mus.*, 32, p. 54.

WECKEL (A.L.), 1909. Freshwater amphipods from Peru. *Proc. U.S. Nat. Mus.*, 38: 623–624.

WOODWORTH (W.), 1897. On some Turbellaria from Illinois. *Bull. Mus. Comp. Zool. Harv.*, 31: 3–16.

C. DEJOUX and A. ILTIS / Editors

Lake Titicaca

A Synthesis of Limnological Knowledge

Kluwer Academic Publishers

Lake Titicaca

A Synthesis of Limnological Knowledge

Edited by

C. DEJOUX and A. ILTIS

KLUWER ACADEMIC PUBLISHERS

DORDRECHT / BOSTON / LONDON

Library of Congress Cataloging-in-Publication Data

Lake Titicaca : a synthesis of limnological knowledge / edited by C.
Dejoux and A. Iltis.
p. cm. -- (Monographiae biologicae ; v. 68)
Includes indexes.
ISBN 0-7923-1663-0 (HB : alk. paper)
1. Limnology--Titicaca Lake (Peru and Bolivia) 2. Aquatic
resources--Titicaca Lake (Peru and Bolivia) I. Dejoux, Claude.
II. Iltis, A. III. Series.
QP1.P37 vol. 68
[QH128]
574 s--dc20
[574.5'26322'098412] 92-7958

ISBN 0-7923-1663-0

Published by Kluwer Academic Publishers,
P.O. Box 17, 3300 AA Dordrecht, The Netherlands.

Kluwer Academic Publishers incorporates
the publishing programmes of
D. Reidel, Martinus Nijhoff, Dr W. Junk and MTP Press.

Sold and distributed in the U.S.A. and Canada
by Kluwer Academic Publishers,
101 Philip Drive, Norwell, MA 02061, U.S.A.

In all other countries, sold and distributed
by Kluwer Academic Publishers Group,
P.O. Box 322, 3300 AH Dordrecht, The Netherlands.

Printed on acid-free paper

Printed in the Netherlands