

Edward Flanders Ricketts and the marine ecology of the inner coast habitats of British Columbia, Canada

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ABSTRACT: Marine ecologist Edward Flanders Ricketts made three trips in the early 1930s to British Columbia, Canada, before publication in 1939 of his *Between Pacific Tides*, the classic marine ecology text for the west coast of North America. *Between Pacific Tides* is a highly influential book, widely read by marine ecology students and researchers working in the intertidal zone. These trips were to the inner coast and sheltered waters of the region, where he sampled marine and estuarine habitats. Explored in this paper are details of Ricketts's British Columbia inner coast work, including comments on collection records, collection site locations and influence of survey results, topics that are new to the literature.

KEYWORDS: *Between Pacific Tides* – Jack Calvin – John Steinbeck – Pacific Biological Laboratories – invertebrate communities – coastal habitats.

INTRODUCTION

Edward Flanders Ricketts (1897–1948) (Figure 1) was a pioneering American marine ecologist, very well known for his unique approach to intertidal ecology. Born in Chicago, Illinois, he studied zoology for three years at the University of Chicago, being influenced there by the ecologist Warder Clyde Allee (1855–1955). After moving to California in 1923, he began studying shoreline flora and fauna while operating Monterey-based Pacific Biological Laboratories, a business that supplied specimens to universities and colleges.¹ Ricketts wrote an important book on intertidal life with his friend Jack Calvin (1901–1985), a sailor, writer and artist who assisted with writing and took the photographs presented. *Between Pacific Tides* (Ricketts and Calvin 1939) was very influential as it was one of the first studies to look at intertidal invertebrates and their habitats as communities, whereas previous works had taken a single species approach. *Between Pacific Tides* is still in print in its fifth edition (1992), and is one of the bestselling books published by Stanford University Press (Lannoo 2010). Ricketts was a friend of Nobel-prize winning author John Steinbeck (1902–1968), and their careers were intertwined. Steinbeck wrote a foreword (Steinbeck 1948) to the 1948 revised edition of *Between Pacific Tides* (Ricketts and Calvin 1948), and Ricketts is recognized as “Doc”, a main character in Steinbeck’s novel *Cannery Row* (Steinbeck 1945), set in Monterey. Ricketts and Steinbeck sailed together to the Sea of Cortez (Gulf of California) in Mexico on a month-long collecting expedition in 1940, and a decade later Steinbeck re-issued an abridged account of the voyage in his widely-read book, *The Log from the Sea of Cortez* (Steinbeck 1951).

Ricketts travelled extensively to Alaska, Oregon and Washington in the Northwest of the USA as well as in Mexico and British Columbia in western Canada to



Figure 1. Edward Flanders Ricketts with a Humboldt squid (*Dosidicus gigas*), July 1936. © Ralph Buchsbaum (1907–2002). Reproduced by permission of Vicki Buchsbaum Pearse.

collect invertebrates and observe coastal ecosystems and habitats. He made three trips (1930, 1932 and 1935) to British Columbia before he published *Between Pacific Tides* in 1939. In this article, the author reviews Ricketts's collecting trips on the inner coast of British Columbia, in the Strait of Georgia (now known as part of the Salish Sea) and along the Inside Passage to Prince Rupert. His collection records, published reports and other material are reviewed and commented upon, and a map of his collection sites presented. Considered too is how much British Columbia material may have been incorporated into Ricketts's narrative in the book *Between Pacific Tides*, and how his 1930s findings may have influenced his perspective on marine ecosystems. Further research on his collections and surveys may yield additional important baseline information on species and habitats in the region.

As far as the author is aware, there has not been any discussion in the scientific literature about Ricketts's British Columbia surveys in the 1930s, which focused on the inner coast and the protected waters of this region. Most of the records for this work were probably lost in a fire in Ricketts's laboratory in 1936; here, the available information is drawn together to give a perspective on his inner coast observations. After *Between Pacific Tides* was published, Ricketts made trips in 1945 and 1946 to the outer coast of British Columbia. He documented his findings in 1948 in the "Outer Shores Transcript" (Ricketts 2006), accessible in the publication *Breaking Through: Essays, Journals, and Travelogues of Edward F. Ricketts* (Rodger 2006). The outer coast observations have also been discussed extensively by Tamm (2004).

RICKETTS'S 1930 TRIP

Ricketts made a trip to the east coast of Vancouver Island (west coast of the Strait of Georgia) in July and August 1930.² He collected specimens of the sea anemone *Anthopleura* subtidally at Comox (Figure 2) on 1 July 1930 and deposited them with the California Academy of Sciences museum in San Francisco.³ He may have collected other specimens for his specimen supplies company, so the trip was likely a combination business/research endeavour. We know that he visited the researchers at the Pacific Biological Station at Nanaimo, British Columbia, because he is mentioned as a visitor in the Station's annual report for 1930 (Clemens 1930). It is possible that Ricketts was visiting polychaete specialists Cyril (1878–1973) and Edith Berkeley (1875–1963), crustacean specialist Josephine Hart (1909–1993) and zoologist Charles McLean Fraser (1872–1944) at the Station. Ricketts corresponded widely with specialists around the world and was in frequent contact with the Berkeleys and Josephine Hart about polychaetes and crustaceans.

Ricketts also visited the east (mainland) side of the Strait of Georgia on his 1930 trip. In the collections of the Smithsonian National Museum of Natural History (USNM), Washington, there are specimens of barnacles *Balanus glandula* and *B. crenata* from Pender Harbour, likely to have been collected by Ricketts between 11 and 13 August 1930.⁴ The records fail to confirm this because barnacle expert Henry Augustus Pilsbry (1862–1957), who identified the specimens, listed the collection as a gift from the Pacific Biological Laboratories. There is also a reference to a USNM collection of amphipods (*Corophium ascherusicum*) from Pender Harbour in a paper by Shoemaker (1949). Although this record is not in their digital files, USNM biologist Karen Reed confirmed that this collection was made by Ricketts on 11 August 1930.⁵ Clarence R. Shoemaker (1874–1958) was a noted amphipod expert who confirmed many of Ricketts's identifications.

As mentioned in *Between Pacific Tides* (1939: 30), Ricketts conducted a feeding experiment at Pender Harbour, and this may have been in 1930 or on his 1932 trip to the area (see below). Ricketts fed an (unidentified) chiton to a sea anemone (*Metridium dianthus*) and observed the digestion rate. This was one of the rather rare observational experiments that Ricketts conducted. Collections made at Pender Harbour in 1930 or 1932 included an encrusting sponge (*Mycale macginitei*) from the rocky intertidal and the bristle worm (*Pectinaria brevicoma*) dredged from the muddy bottom (Ricketts 1939: 176, 199).

THE GRAMPUS TRIP – 1932

Jack Calvin owned *Grampus*, a 10-metre-long power launch. Together with his wife Sasha Andrevna Calvin (1901–1971), he, Ricketts and the writer Joseph Campbell (1904–1987) travelled from Tacoma, Washington, to Sitka, Alaska, via the Inside Passage. They left Tacoma on 29 June 1932. *Grampus* made about 14 stops in British Columbia, where Ricketts collected or made ecological observations that were recorded in his “Wave Shock” essay (Ricketts 2015: 45–71) written in 1932 but not published until it formed part of the publication *Ed Ricketts from Cannery Row to Sitka, Alaska* (Straley 2015). Unless otherwise stated, the following material is either from that essay or Tamm (2004).

Their first stop in British Columbia was at Clam Bay, between Thetis and Penelakut Island (formerly Kuper Island), where they anchored on 2 July 1932. Ricketts (2015: 49) noted “tens of thousands” of the bubble shell or nudibranch *Haminoea vesicular* in eelgrass beds,



Figure 2. Map of the British Columbia coast showing Ricketts's collection sites in 1930, 1932, 1935 (inner coast), and 1945 and 1946 (outer coast). There were four additional collection sites in the Masset area and nine in the vicinity of Clayoquot Sound. Some of the stopover points for the 1932 *Grampus* voyage are also shown. Additional places named in the text: (1) Strait of Georgia (now known as the Canadian part of the Salish Sea); (2) Tacoma, Washington; (3) Sitka, Alaska; (4) Grenville Channel; (5) Fraser River estuary; (6) Vancouver Island; (7) Milbanke Sound; (8) Queen Charlotte Islands (now known as Haida Gwaii); and (9) Alberni Inlet. Map data by C. D. Levings and map creation by B. C. Mason MRM.

presumably by wading or perhaps looking over the side of the canoe that the *Grampus* carried. Ricketts was looking especially for the clinging jellyfish *Gonionemus vertens*, which was one his favoured organisms for his business, but found only a few at Clam Bay.

Grampus then travelled northwest to Nanaimo, where the vessel anchored on 3 July 1932 because of poor weather, and then crossed over to the east side of the Strait of Georgia the next day. A stop was made at Pender Harbour. Ricketts sampled and collected with a dredge on a northeast reach of Agamemnon Channel, close to Pender Harbour, on 4 July 1932. He described an invertebrate fauna characteristic of the tidal-swept area: the starfish *Pisaster*, the polychaete *Serpula*, “the vividly red tunicate *Steyla stimpsoni*”, the mussel *Mytilus*, and medium to giant barnacles *Balanus cariosus* were some of the dominant organisms. He collected specimens of the red sea cucumber *Cucumaria miniata* in the area and deposited them in the Museum of Comparative Zoology at Harvard University in Cambridge, Massachusetts.⁶

The *Grampus* made two stops in the Desolation Sound area, likely on 6 July 1932. An emergency stop for engine repairs at Refuge Cove on West Redonda Island enabled Ricketts (2015: 49) to sample a “coral colored sponge (similar to *Esperiopsis rigida*)”. Ricketts (2015: 50) then visited the saltwater lagoon at Squirrel Cove and observed “a most remarkable fauna of sea cucumber *Stichopus*, starfish *Dermasterias*, and enormous *Terebratalia* [brachiopods]...”. A few specimens of the jellyfish *Gonionemus* were taken at both Refuge Cove and Squirrel Cove. Travelling through the Yuculta Rapids (possibly on 6 July 1932) Ricketts noted that these rapids were unlikely barriers for pelagic larvae. The next stop for the *Grampus* was at Port Harvey, possibly on July 8; unfortunately, the collection date for the sea cucumber (*Cucumaria miniata*) obtained there (“from Mrs. Dawson’s float”) and donated to the Harvard museum was not recorded.⁷

After travelling across Milbanke Sound, the *Grampus* re-entered the Inside Passage, and Ricketts’s next collecting place was at Bella Bella. Ricketts collected specimens of the nudibranch *Melibe leonine* here in an eelgrass bed. At the next stop, on 17–18 July 1932, Ricketts (2015: 51) collected sea anemones at Fisherman Cove, near Butedale, and also made extensive observations of the invertebrate fauna: “Shelled snails were especially abundant; *Thais lamellose* and *Searlesia dira* both by tens of thousands.” Ricketts deposited specimens of the anemone *Anthopleura* from this site to the California Academy of Sciences museum.⁸ The collection records might need correcting, however, because they state that Fisherman Cove is in Howe Sound, near Vancouver, British Columbia – and although there is such a place, it is likely that the specimen is in fact from the Fisherman Cove near the Butedale site. The collection dates of 17–18 July 1932 on the record are correct.

Continuing north through the narrow and scenic Grenville Channel, the expedition stopped in at Lowe Inlet on 19 June 1932. Ricketts (2015: 52) gave some interesting comments on the highly estuarine nature of the inlet: “It would be easy to believe that fresh water is the chief limiting marine factor in these inlets.” Ricketts noted that freshwater above the saltwater layer caused the anemone *Urticina* to hang limp and half open. Revealing his experimental side once again, Ricketts (2015: 52) put the anemone in sea water obtained outside the inlet, and observed “we got them to expand nicely” – in effect an observation of the salt tolerance of the species. Ricketts collected the sea anemone *Anthopleura artemisia* here, and specimens were donated to the California Academy of Sciences museum.⁹

Canoe Pass, “some 30 miles [48 kilometres] north of Prince Rupert” (Ricketts 2015: 54), was the last site in Canada that Ricketts mentioned before *Grampus* crossed into Alaska. It is not exactly clear where this site is, as “Canoe Pass” is a frequently used local name up and

down the coast. However, Isaacson and Hourston (1972) list this locale on the Tsimpsean Peninsula near Prince Rupert. Ricketts (2015: 54) noted the extraordinary abundance of the jellyfish *Aequorea* here and also mentioned in a footnote in *Between Pacific Tides* (Ricketts and Calvin 1939: 173) the “great beds” of sea cucumber *Cucumaria miniata* in Canoe Pass, British Columbia.

Ricketts probably did collect sea anemones here, but the collection record for *A. artemisia* from Canoe Pass in the California Academy museum might need correcting.¹⁰ It lists Canoe Pass on Westham Island in the Fraser River estuary as the collection locale, with the date 21 July 1932, which matches the time *Grampus* would have been near Prince Rupert. However, Canoe Pass near Westham Island is in a freshwater and highly turbid reach of the Fraser River estuary where sea anemones could not survive. Ricketts also deposited a collection of the sipunculid *Golfingia margaritacea* from this site to the USNM, once again with the location identified as Canoe Pass, 21 July 1932.¹¹ On the collection card, Canoe Pass is listed as on Kate Island, but this author could not find the island listed in a gazetteer for the north coast of British Columbia.

DEEP COVE – 1935

Ricketts visited southern Vancouver Island in August 1935. He collected nemertean worms (*Carinella rubra*) at Deep Cove on Saanich Inlet and noted that they were very abundant, under rocks (Ricketts and Calvin 1939: 176). He had plans of sampling at outer coast locations on southwest Vancouver Island (Victoria, Sooke and Jordan River), but there are no records of collecting at those places. So far as one knows, he did not make it to the outer coast on this trip.²

His 1935 trip to Vancouver Island was an interesting venture because he also attempted to take three live invertebrate specimens back to California. The animals were likely crabs, as correspondence about the specimens was with Los Angeles carcinologist Steve A. Glassell (1884–1948). However, the animals did not survive the trip, which involved a ferry to the mainland and a two- or three-day drive south.²

INFLUENCE OF RICKETTS’ INNER COAST DATA

The British Columbia coast has a relatively low profile in the detailed fauna descriptions in *Between Pacific Tides*, with most of the mentions stating that British Columbia locales are the northern extent (or rarely southern extent) of the range of a species, or that other scientists collected at them. The book was first submitted for publication in 1930 (Egerton 2016), but was not published until nine years later, so there were opportunities to include some material from his three trips to British Columbia. The book does mention Ricketts’s personal collections and the observations he made at Canoe Pass, Refuge Cove, Squirrel Cove, Fisherman Cove (all from 1932), Deep Cove (1935), and Pender Harbour (1930 or 1932). There are also mentions of observations or biological information from general areas described as British Columbia, the Strait of Georgia or northern British Columbia. Given that Ricketts was based in California, many of the examples in the book are from the outer coast of that region or Mexico, as might be expected. However, the communities of the inside waters of British Columbia offered a “quiet water” (a term he often used) assemblage that was a contrast, or foil, to the

wave-shock affected communities of the outer coast. In this context, perhaps his work on the inner coast of British Columbia was an important component when Ricketts was developing his ecological theory (Ricketts 2015: 43–71) that wave action was a major controlling factor on coastal ecosystems.

Ricketts's 1932 observations during his *Grampus* trip on the influence of freshwater flows on inlet invertebrates were likely the first example, albeit limited, of an estuarine ecological study in British Columbia. His field experiments with sea anemones at Lowe Inlet identified the influence of a halocline (the border between the freshwater lens on the surface of an estuary and the saltwater layer below) on organism distribution, and he clearly noted freshwater as a limiting factor. He also recognized the importance of what we now call cumulative effects: "The chief limiting factors of quiet water communities are probably ... temperature fluctuations ... salinity fluctuations due to rain, influx of fresh water and evaporation ... fluctuations in oxygen ... occasional presence and deposition of silt ... and probably other minor factors, important in their sum" (Ricketts 2015: 70). He specifically identifies these four factors later on in the paper. It was not until 23 years later, in 1955, that Bousfield (1958) conducted the next faunal assessment of British Columbian estuarine habitats, along the Strait of Georgia. Several ecologists later studied this estuarine coast (Levings *et al.* 1983; Burd *et al.* 2008).

CONCLUSIONS AND FURTHER INFORMATION

In some ways, Ricketts's 1930s trips to the inner coast of British Columbia were formative and provided preliminary observations for his comprehensive view of marine ecology. No doubt, a lot of valuable information gathered in these trips was lost in the 1936 fire in his laboratory – material that factored into his thinking and ultimately might have been incorporated into *Between Pacific Tides*. Perhaps because he was not able to sample the outer coast in his 1935 trip, a decade later he made several important and more detailed trips in 1945 and 1946 to the British Columbia outer coast, especially to the west coast of Vancouver Island, the Queen Charlotte Islands (now known as Haida Gwaii), and the north coast around Prince Rupert. For completeness, the map (Figure 2) identifies the sampling locales for those trips and other places such as Bamfield and Kildonan on Alberni Inlet where he made observations, but did not collect. These expeditions have been well documented in Tamm (2004) and in Rickett's own notebooks from his trips (Ricketts 2006). Ricketts intended to publish a *magnum opus* ecological synthesis volume that covered the west coast of North America, from Mexico to Alaska. The book likely would have incorporated more British Columbia data, including those from his trips in the 1930s and 1940s, but that was not to be, as he died when his car was hit by a train in Monterey in 1948 (Lannoo 2010).

Ricketts's legacy lives on, and as more of his unpublished material becomes available, it is possible that additional information on his findings will be discovered, providing important baseline data for both the sheltered and exposed waters of the British Columbia coast, as well as providing further insight into his thinking. Although the author has explored some of Ricketts's written material on British Columbia from the 1930s, and searched for his collection records in three of the American museums where he deposited specimens, there are possibly more interesting data to be found. Some of the material needs to be investigated carefully. For example, in the Stanford University digital archive of the collecting cards from his 1945 and 1946 trips there is an entire subcategory called "Queen Charlotte Islands, British Columbia"

with an extensive list of taxa.¹² However, when opening the taxa lists files, there are additional records from numerous locations on Vancouver Island and the inside waters of the north coast mainland (for instance, the Nass River estuary, near Arrandale). Some of his observations on his later trips may also be firsts for British Columbia. For example, found under the Stanford listings for Amphipoda, his observations on the specific biological effects of pollution from the Port Alice and Prince Rupert pulp mills in 1945 and 1946 are probably among the earliest examples of the effects on invertebrates of estuarine pollution in British Columbia. Thus, further research into these files will no doubt reveal more valuable and interesting data that Ricketts obtained for marine ecosystems on the west coast of Canada.

ACKNOWLEDGEMENTS

Thanks are owing to Brad Mason, Langley, British Columbia, for his great help in developing the map (Figure 2). Dr Michael Hawkes, University of British Columbia Botany Department (retired) and Ricketts expert, commented on the paper and provided some important leads to archival information, as did Gordon Miller, retired librarian from the Pacific Biological Station. Karen Reed at the USNM was very helpful when searching collection records. I am grateful to historian Michael Hemp, Gig Harbor, Washington, for discussions about Ricketts, to Don Kohrs, Hopkins Marine Station, Stanford University, Monterey, California, for enabling citation of his draft paper on Ricketts' collecting trips, and Dr Keith R. Benson, Department of History, University of British Columbia (retired), for discussions. Thanks are owed to Shorefast Editions, Juneau, Alaska, for enabling use of material cited from Straley (2015). Dr Eric L. Mills reviewed the draft paper and provided very useful comments.

NOTES

¹ Pacific Biological Laboratories were jointly founded by Albert E. Galigher (1899–1960) and Ricketts in 1923. The initial lab was in a one-story board and batten building located on Fountain Avenue, Pacific Grove. In 1924, the partnership with Galigher ended; in 1928 Ricketts moved the lab to 740 Ocean View Avenue, Monterey. The house number was later renumbered 800; in 1958 a stretch of the avenue was renamed Cannery Row. M. Hawkes, Botany Department (retired), University of British Columbia, Vancouver, pers. comm., 3 March 2019.

² D. G. Kohrs, 2016. [Draft] Edward F. Ricketts' collecting trips along the Pacific coast. Available at: https://web.stanford.edu/group/seaside/ed/COLLECTING_TRIPS (accessed 28 December 2019).

³ California Academy of Sciences (hereafter CAL), Institute for Biodiversity and Sustainability, Invertebrate Zoology Collection, Catalogue Number CAS-IZ 4681.00.

⁴ Smithsonian National Museum of Natural History (hereafter SNMNH); Department of Invertebrate Zoology Collections Catalogue Number USNM 66621.

⁵ K. Reed, National Museum of Natural History, Suitland, Maryland, to C. D. Levings, pers. comm., 8 March 2019.

⁶ Harvard Museum of Comparative Zoology Catalogue (hereafter HMCZ), Number Invertebrate Zoology HOL-1757. Deposition not recorded in Ricketts (2015).

⁷ HMCZ, Catalogue Number MCZ: IZ: HOL-1755. Deposition not recorded in Ricketts (2015).

⁸ CAL Institute for Biodiversity and Sustainability, Invertebrate Zoology Collection, Catalogue Number CAS-IZ 16180.00. Deposition not recorded in Ricketts (2015).

⁹ CAL Institute for Biodiversity and Sustainability, Invertebrate Zoology Collection, Catalogue Number CAS-IZ 67958.00. Deposition not recorded in Ricketts (2015).

¹⁰ CAL Institute for Biodiversity and Sustainability, Invertebrate Zoology Collection, Catalogue Number CAS-IZ 67956.00. Deposition not recorded in Ricketts (2015).

¹¹ SNMNH, Department of Invertebrate Zoology Collections, Catalogue USNM 27629. Deposition not recorded in Ricketts (2015).

¹² Hopkins Marine Station: Seaside-History of Marine Science in Southern Monterey Bay. Ed Ricketts Survey Cards. Available at: <https://seaside.stanford.edu/survey> (accessed 5 April 2019).

REFERENCES

- BOUSFIELD, E., 1958. Ecological investigations on shore invertebrates of the Pacific coast of Canada, 1955 data. *Bulletin of the National Museum of Canada* **147**: 104–115.
- BURD, B. J., P. A. G. BARNES, C. A. WRIGHT and R. E. THOMSON, 2008. A review of subtidal benthic habitats and invertebrate biota of the Strait of Georgia, British Columbia. *Marine Environmental Research* **66**: S3–S38.
- CLEMENS, W. A., 1930. [Biological Board of Canada] *Report of the Pacific Biological Station for 1930*. Nanaimo, British Columbia.
- EGERTON, F. N., 2016. History of ecological sciences, Part 58A: Marine ecology, mid-1920s to about 1990, featuring Beebe, Bigelow, Ricketts. *Bulletin of the Ecological Society of America* **97**: 372–402.
- ISAACSON, R. S. K., and A. S. HOURSTON, 1972. Area and locality coding for British Columbia herring biological data. *Fisheries Research Board of Canada Manuscript Report Series No.* **1174**.
- LANNOO, M., 2010. *Leopold's Shack and Ricketts' Lab: The Emergence of Environmentalism*. Berkeley.
- LEVINGS, C. D., R. E. FOREMAN and V. J. TUNNICLIFFE, 1983. A review of the benthos of the Strait of Georgia and contiguous fjords. *Canadian Journal of Fisheries and Aquatic Sciences* **40**: 1,120–1,141.
- RICKETTS, E. F., 2006. Transcript of summer 1945 and 1946 notes based on trips to the outer shores, west coast of Vancouver Island, Queen Charlotte Islands, and so on. In: K. A. Rodger (editor), *Breaking Through: Essays, Journals, and Travelogues of Edward F. Ricketts*, pp. 223–323. Berkeley.
- RICKETTS, E. F., 2015. Notes and observations, mostly ecological, resulting from northern Pacific collecting trips chiefly in southeastern Alaska, with special reference to wave shock as a factor in littoral ecology. In: J. M. Straley (editor), *Ed Ricketts from Cannery Row to Sitka, Alaska*, pp. 45–71. Juneau.
- RICKETTS, E. F., and J. CALVIN, 1939. *Between Pacific Tides*. Stanford.
- RICKETTS, E. F., and J. CALVIN, 1948. *Between Pacific Tides*. Second edition. Stanford.
- RICKETTS, E. F., J. CALVIN and J. W. Hedgpeth, Revised by D. W. Phillips. 1992. *Between Pacific Tides*. Fifth edition. Stanford.
- RODGER, K. A. (editor), 2006. *Breaking Through: Essays, Journals, and Travelogues of Edward F. Ricketts*. Berkeley.
- SHOEMAKER, C. R. 1949. The amphipod genus *Corophium* on the west coast of America. *Journal of the Washington Academy of Sciences* **39**: 66–82.
- STEINBECK, J. E., 1945. *Cannery Row*. New York.
- STEINBECK, J. E., 1948. Foreword. In: E. F. Ricketts and J. Calvin, *Between Pacific Tides*, pp. v–vi. Stanford.
- STEINBECK, J. E., 1951. *The Log of the Sea of Cortez: Being the Narrative Portion of Sea of Cortez, the Report of the Steinbeck-Ricketts Expedition in the Gulf of California*. New York.
- STRALEY, J. M. (editor), 2015. *Ed Ricketts from Cannery Row to Sitka, Alaska. Science, History, and Reflections along the Pacific Coast: A Compilation of Essays*. Juneau.
- TAMM, E. E. 2004. *Beyond the Outer Shores: The Untold Odyssey of Ed Ricketts, the Pioneering Ecologist who Inspired John Steinbeck and Joseph Campbell*. New York.

Received 12 March 2019. Accepted 18 April 2019.

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