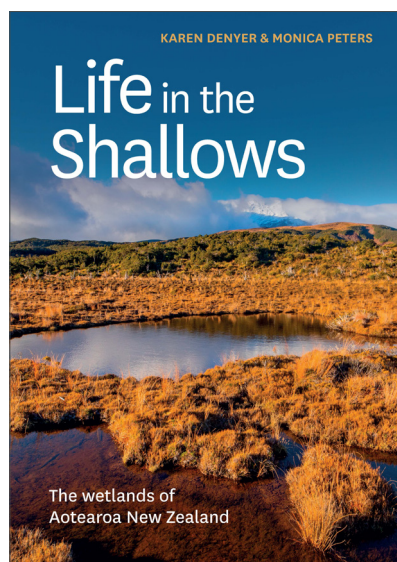


Life in the Shallows

The wetlands of Aotearoa New Zealand

KAREN DENYER AND MONICA PETERS



\$65

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HOW WETLANDS WORK, WHAT LIVES THERE AND WHAT WE CAN DO TO PROTECT THEM

Rich and diverse but often unloved, Aotearoa's wetlands are the most vulnerable of our ecosystems. Only a tiny fraction of their original extent remains, and we continue to lose this vital habitat. The race is on to discover more about them while we still can. This highly illustrated and absorbing book introduces and explores the wetlands of Aotearoa through the work and experiences of our leading researchers.

It also explores the deep cultural and spiritual significance they have for Māori, and the collaboration of mātauranga Māori and western science in continuing to improve our understanding of these special places.

Featuring wetlands to visit all around the country, descriptions of the rich bird, insect and plant life that can be found there, and some of the innovative ways we can protect and restore them, *Life in the Shallows* is a key resource for those who want to explore, understand and care for these precious places.

ABOUT THE AUTHORS

Karen Denyer MSc (Hons) has worked as an ecological consultant for over 20 years, much of it in wetland ecology. She has also been involved for many years in environmental education, and has written a number of publications. She has been Executive Officer at National Wetlands Trust since 2008.

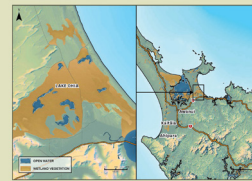
Monica Peters has a PhD from Waikato University on the ecology of community environmental groups and is currently Co-Chair, Citizen Science Association of Aotearoa New Zealand. Her background includes hands-on conservation, research, science communication, international development and fine arts.

SALES POINTS

- Interviews and contributions from over 20 of New Zealand's leading wetland scientists to inspire the next generation of researchers
- Fascinating discoveries about how wetlands habitats work and what lives in them
- Inspiration and information for those wanting to conserve and restore wetlands — community and iwi groups, councils, farmers and students
- Wide range of subjects: how wetlands form, how to build a new wetland, how new species are discovered and named, and how scientists carry out field research and find solutions to problems caused by climate change, pollution, pests and people



KAREN DENYER & MONICA PETERS



Northland's kaiaua gundams, where hawks are protected by a scientific reserve and are not open to the public, but a similar type of wetland can be visited at nearby Lake Ohia.

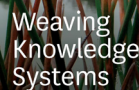
Like a setting out of *Lord of the Rings*, Lake at an other-worldly site where you will see a bizarre landscape of charmed rocks, and a lake with a dark, swirling black water. Lake Ohia is a lake with a lake. Sculpted by a landscape-altering insect species, it's an ideal place for a historical outing.

This was once the site of a dense kaui forest, but around 1900 years of the last ice Age, about 10,000 years ago, the entire level rose and formed an ephemeral lake, drowning the trees and entombing their remains. The thick tangle of ancient kaui stump was exposed in the early 1900s, when the lake was drained to aid gum digging seeking the highly valued kaui. The lake was then filled by the long-gone forest. The lake is now a floating forest present for only a couple of months each winter. Summer visitors may well ask, "Lake? What visitors?"



Access is via the base of Karikari Peninsula, a 40-minute drive northeast of Kaikōura. Turn off State Highway 10 onto Island Road; a 300-metre sand track to the edge of Lake Ohia is 1 kilometre on the left. Continue another kilometre along Island Road to the Gum Hole Reserve, where a short metalled track connected with boardwalks loops through stunted *manuka* scrub and passes a series of holes excavated by gum diggers.

Woolena Lagoon in Barrera Forest Park is an ephemeral pool surrounded by pedocarp forest. Murrumbidgee Māori, traditional Māori knowledge systems, are a vital part of the care and conservation of these special places.



Specialized field: *Kangaroo Island research*
(Application of human values and principles)
Traditional knowledge, but also modern management, and science communication

Currently works for: *Mawakia Whānau – Landcare Research, Ngāi Tahu Māori Trusts, or as a homeward-bound Māori (postgraduate) within Mawakia Trust*

Yvette Teara descends from the line of Ngāi Te Hango, Ngāi Hango, Ngāi-tahi, Ngāi Urewera and Ngāi Tawhiao. She works with a dynamic team of researchers and students, which is often called in to provide cultural and ecological expertise and to work collaboratively with Māori and indigenous communities at local, regional and national levels. In 2010, Yvette co-edited and released the book *Whānau Kōwhiri: Te Kōwhiri o Te Tāpui*. The book is the result of a collaborative project between Mawakia Whānau and Whānau Kōwhiri. The book followed a second release in 2005, *He Kōwhiri o Te Tāpui*, the first of the *Whānau Kōwhiri* series. The cultural wealth and knowledge of the book includes traditional cultural resources and insights from the ground

Ka nui te archa ki a kōhau mō āke tonu atu, nā Yvonne.



Fish Hotels and 'Carriers' 65



Fish Hotels and 'Carriers' 65



Name of approach	Specific examples
The Cultural Health Index (CHI) for rivers and streams ¹⁰	<ul style="list-style-type: none"> • Chi method and application used extensively by iwi/hapū groups to inform decisions and provide knowledge to support collaborative processes¹¹ • Adaptations have been made for freshwater and estuarine environments¹²
Tribal/regional state of environment reporting – State of Teitaki	A "toolkit" for iwi environmental monitoring and reporting in Waiapu/Napua South Island, developed by Ngāi Tahu ¹³
Wetlands	<ul style="list-style-type: none"> • National monitoring approaches and indicators of wetland¹⁴ • wetland habitats along the Hukatoa west coast, e.g. Tongareva wetland assessment approach¹⁵

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Table 6. Complementary assessment/monitoring approaches^a[illegible]

1980-1981, 1982-1983, 1984-1985, 1986-1987, 1988-1989, 1990-1991, 1992-1993, 1994-1995, 1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005, 2006-2007, 2008-2009, 2010-2011, 2012-2013, 2014-2015, 2016-2017, 2018-2019, 2020-2021, 2022-2023, 2024-2025, 2026-2027, 2028-2029, 2030-2031, 2032-2033, 2034-2035, 2036-2037, 2038-2039, 2040-2041, 2042-2043, 2044-2045, 2046-2047, 2048-2049, 2050-2051, 2052-2053, 2054-2055, 2056-2057, 2058-2059, 2060-2061, 2062-2063, 2064-2065, 2066-2067, 2068-2069, 2070-2071, 2072-2073, 2074-2075, 2076-2077, 2078-2079, 2080-2081, 2082-2083, 2084-2085, 2086-2087, 2088-2089, 2090-2091, 2092-2093, 2094-2095, 2096-2097, 2098-2099, 2100-2101, 2102-2103, 2104-2105, 2106-2107, 2108-2109, 2110-2111, 2112-2113, 2114-2115, 2116-2117, 2118-2119, 2120-2121, 2122-2123, 2124-2125, 2126-2127, 2128-2129, 2130-2131, 2132-2133, 2134-2135, 2136-2137, 2138-2139, 2140-2141, 2142-2143, 2144-2145, 2146-2147, 2148-2149, 2150-2151, 2152-2153, 2154-2155, 2156-2157, 2158-2159, 2160-2161, 2162-2163, 2164-2165, 2166-2167, 2168-2169, 2170-2171, 2172-2173, 2174-2175, 2176-2177, 2178-2179, 2180-2181, 2182-2183, 2184-2185, 2186-2187, 2188-2189, 2190-2191, 2192-2193, 2194-2195, 2196-2197, 2198-2199, 2200-2201, 2202-2203, 2204-2205, 2206-2207, 2208-2209, 2210-2211, 2212-2213, 2214-2215, 2216-2217, 2218-2219, 2220-2221, 2222-2223, 2224-2225, 2226-2227, 2228-2229, 2230-2231, 2232-2233, 2234-2235, 2236-2237, 2238-2239, 2240-2241, 2242-2243, 2244-2245, 2246-2247, 2248-2249, 2250-2251, 2252-2253, 2254-2255, 2256-2257, 2258-2259, 2260-2261, 2262-2263, 2264-2265, 2266-2267, 2268-2269, 2270-2271, 2272-2273, 2274-2275, 2276-2277, 2278-2279, 2280-2281, 2282-2283, 2284-2285, 2286-2287, 2288-2289, 2290-2291, 2292-2293, 2294-2295, 2296-2297, 2298-2299, 2300-2301, 2302-2303, 2304-2305, 2306-2307, 2308-2309, 2310-2311, 2312-2313, 2314-2315, 2316-2317, 2318-2319, 2320-2321, 2322-2323, 2324-2325, 2326-2327, 2328-2329, 2330-2331, 2332-2333, 2334-2335, 2336-2337, 2338-2339, 2340-2341, 2342-2343, 2344-2345, 2346-2347, 2348-2349, 2350-2351, 2352-2353, 2354-2355, 2356-2357, 2358-2359, 2360-2361, 2362-2363, 2364-2365, 2366-2367, 2368-2369, 2370-2371, 2372-2373, 2374-2375, 2376-2377, 2378-2379, 2380-2381, 2382-2383, 2384-2385, 2386-2387, 2388-2389, 2390-2391, 2392-2393, 2394-2395, 2396-2397, 2398-2399, 2400-2401, 2402-2403, 2404-2405, 2406-2407, 2408-2409, 2410-2411, 2412-2413, 2414-2415, 2416-2417, 2418-2419, 2420-2421, 2422-2423, 2424-2425, 2426-2427, 2428-2429, 2430-2431, 2432-2433, 2434-2435, 2436-2437, 2438-2439, 2440-2441, 2442-2443, 2444-2445, 2446-2447, 2448-2449, 2450-2451, 2452-2453, 2454-2455, 2456-2457, 2458-2459, 2460-2461, 2462-2463, 2464-2465, 2466-2467, 2468-2469, 2470-2471, 2472-2473, 2474-2475, 2476-2477, 2478-2479, 2480-2481, 2482-2483, 2484-2485, 2486-2487, 2488-2489, 2490-2491, 2492-2493, 2494-2495, 2496-2497, 2498-2499, 2500-2501, 2502-2503, 2504-2505, 2506-2507, 2508-2509, 2510-2511, 2512-2513, 2514-2515, 2516-2517, 2518-2519, 2520-2521, 2522-2523, 2524-2525, 2526-2527, 2528-2529, 2530-2531, 2532-2533, 2534-2535, 2536-2537, 2538-2539, 2540-2541, 2542-2543, 2544-2545, 2546-2547, 2548-2549, 2550-2551, 2552-2553, 2554-2555, 2556-2557, 2558-2559, 2560-2561, 2562-2563, 2564-2565, 2566-2567, 2568-2569, 2570-2571, 2572-2573, 2574-2575, 2576-2577, 2578-2579, 2580-2581, 2582-2583, 2584-2585, 2586-2587, 2588-2589, 2590-2591, 2592-2593, 2594-2595, 2596-2597, 2598-2599, 2600-2601, 2602-2603, 2604-2605, 2606-2607, 2608-2609, 2610-2611, 2612-2613, 2614-2615, 2616-2617, 2618-2619, 2620-2621, 2622-2623, 2624-2625, 2626-2627, 2628-2629, 2630-2631, 2632-2633, 2634-2635, 2636-2637, 2638-2639, 2640-2641, 2642-2643, 2644-2645, 2646-2647, 2648-2649, 2650-2651, 2652-2653, 2654-2655, 2656-2657, 2658-2659, 2660-2661, 2662-2663, 2664-2665, 2666-2667, 2668-2669, 2670-2671, 2672-2673, 2674-2675, 2676-2677, 2678-2679, 2680-2681, 2682-2683, 2684-2685, 2686-2687, 2688-2689, 2690-2691, 2692-2693, 2694-2695, 2696-2697, 2698-2699, 2700-2701, 2702-2703, 2704-2705, 2706-2707, 2708-2709, 2710-2711, 2712-2713, 2714-2715, 2716-2717, 2718-2719, 2720-2721, 2722-2723, 27