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CONFIRMATION OF COSEXUALITY IN PACIFIC YEW
(TAXUS BREVIFOLIA NUTT.)

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Key words: Pacific yew, Taxus brevifolia, dioecious, cosexuality, British Columbia, pollen, seed.

Unlike most evergreen conifers in our forests, which have both pollen and seed on a single tree, Pacific yew (Taxus brevifolia Nutt.) is dioecious, the 2 sexes being segregated on different trees (Rudolf 1974, Taylor and Taylor 1981, Bolsinger and Jaramillo 1990, Hils 1993).

In July 1993 branch samples of T. brevifolia were taken from an undisturbed stand of coastal Douglas-fir (Pseudotsuga menziesii) on southern Vancouver Island (48°26'N lat.; 123°28'W long.) near Victoria, British Columbia. One of the samples was observed to have both male and female reproductive structures (bud scales partially removed) on a single twig (Fig. 1).

Occasionally, male and female structures can occur on the same tree (Taylor and Taylor 1981). In the instances reported (Owens and Simpson 1986, DiFazio 1995), female and male structures occurred together only on branches of predominantly male trees. We observed this phenomenon, termed cosexuality (Lloyd 1980), on a single yew tree. On one branch, female and male reproductive structures were observed within a few mm of each other (Fig. 1) on an otherwise male tree. The structures were visually identical to respective buds from other dioecious trees. In a study by DiFazio (1995), cosexuality was found in 17 of 58 male trees (29.3%). It is not known whether these female buds found on male trees produce viable seed.

Reproductive buds of the Pacific yew can be visually differentiated throughout the year (Taylor and Taylor 1981) and are usually located on the underside of the shoot on noncurrent growth. Male buds are small (2–3 mm), round, and green, and they generally occur in clusters (Fig. 2). They consist of a number of distinct segments made up of pillowlike structures (microsporangia) in which the pollen mature. In spring microsporangia burst the bud scales (Fig. 3) and pollen is released. Female buds generally occur singly (Fig. 4) and are erect, oval (2–3 mm), and green. The female bud matures slowly through spring and summer with the ovule (Fig. 5) growing through the bud scales and revealing the micropyle (opening for pollen). Beginning in late July or early August, depending on location, a fleshy red aril (berry) around the hard-coated seed becomes visible.

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LITERATURE CITED


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Fig. 1-5. Scanning electron micrograph confirming cosexuality in Pacific yew (Taxus brevifolia) from southern Vancouver Island, British Columbia. Scale bar = 1 mm in each figure. 1, Male bud (left) and female bud (right), both with bud scales partially removed, on the same twig. 2, Young male bud (March) prior to shedding of pollen, bud scales intact. 3, Young male bud (March) showing the emerging microsporangia (M), bud scales intact. 4, Young female bud (March); bud scales intact. 5, Mature female bud (August) showing the ovule tip (Ov) and micropyle emerging through the center of the intact bud scales.