



11-21-1996

## Confirmation of cosexuality in Pacific yew (*Taxus brevifolia* Nutt.)

K. E. Hogg

*Canadian Forest Service, Pacific Forestry Centre, Victoria British Columbia, Canada*

A. K. Mitchell

*Canadian Forest Service, Pacific Forestry Centre, Victoria British Columbia, Canada*

M. R. Clayton

*Canadian Forest Service, Pacific Forestry Centre, Victoria British Columbia, Canada*

Follow this and additional works at: <https://scholarsarchive.byu.edu/gbn>

---

### Recommended Citation

Hogg, K. E.; Mitchell, A. K.; and Clayton, M. R. (1996) "Confirmation of cosexuality in Pacific yew (*Taxus brevifolia* Nutt.)," *Great Basin Naturalist*: Vol. 56 : No. 4 , Article 13.

Available at: <https://scholarsarchive.byu.edu/gbn/vol56/iss4/13>

This Note is brought to you for free and open access by the Western North American Naturalist Publications at BYU ScholarsArchive. It has been accepted for inclusion in Great Basin Naturalist by an authorized editor of BYU ScholarsArchive. For more information, please contact [scholarsarchive@byu.edu](mailto:scholarsarchive@byu.edu), [ellen\\_amatangelo@byu.edu](mailto:ellen_amatangelo@byu.edu).

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

K. E. Hogg<sup>1</sup>, A. K. Mitchell<sup>1,2</sup>, and M. R. Clayton<sup>1</sup>

*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.

### ACKNOWLEDGMENTS

The authors thank L. Kaupp (University of Victoria) for field sampling and L. Manning (Pacific Forestry Centre) for preparation of the photographic plate.

### LITERATURE CITED

- BOLSINGER, C. L., AND K. E. JARAMILLO. 1990. *Taxus brevifolia* Nutt.—Pacific yew. Pages 573–579 in R. M. Burns and B. H. Honkala, editors, *Silvics of North America: 1. Conifers*. Agriculture Handbook 654. United States Department of Agriculture, Forest Service, Washington, DC.
- DIFAZIO, S. P. 1995. The reproductive ecology of Pacific yew (*Taxus brevifolia* Nutt.) under a range of overstory conditions in western Oregon. Unpublished dissertation, Oregon State University, Corvallis. 178 pp.
- HILS, M. H. 1993. *Taxus*. Pages 424–426 in *Flora of North America* Committee, editors, *Flora of North America*. Volume 2. Pteridophytes and Gymnosperms. Oxford University Press, New York.
- LLOYD, D. G. 1980. Sexual strategies in plants III. A quantitative method for describing the gender of plants. *New Zealand Journal of Botany* 18: 103–108.
- OWENS, J. N., AND S. SIMPSON. 1986. Pollen from conifers native to British Columbia. *Canadian Journal of Forest Research* 16: 955–967.
- RUDOLF, P. O. 1974. *Taxus*. Pages 799–802 in *Seeds of woody plants in the United States*. United States Department of Agriculture, Forest Service, Washington, DC.

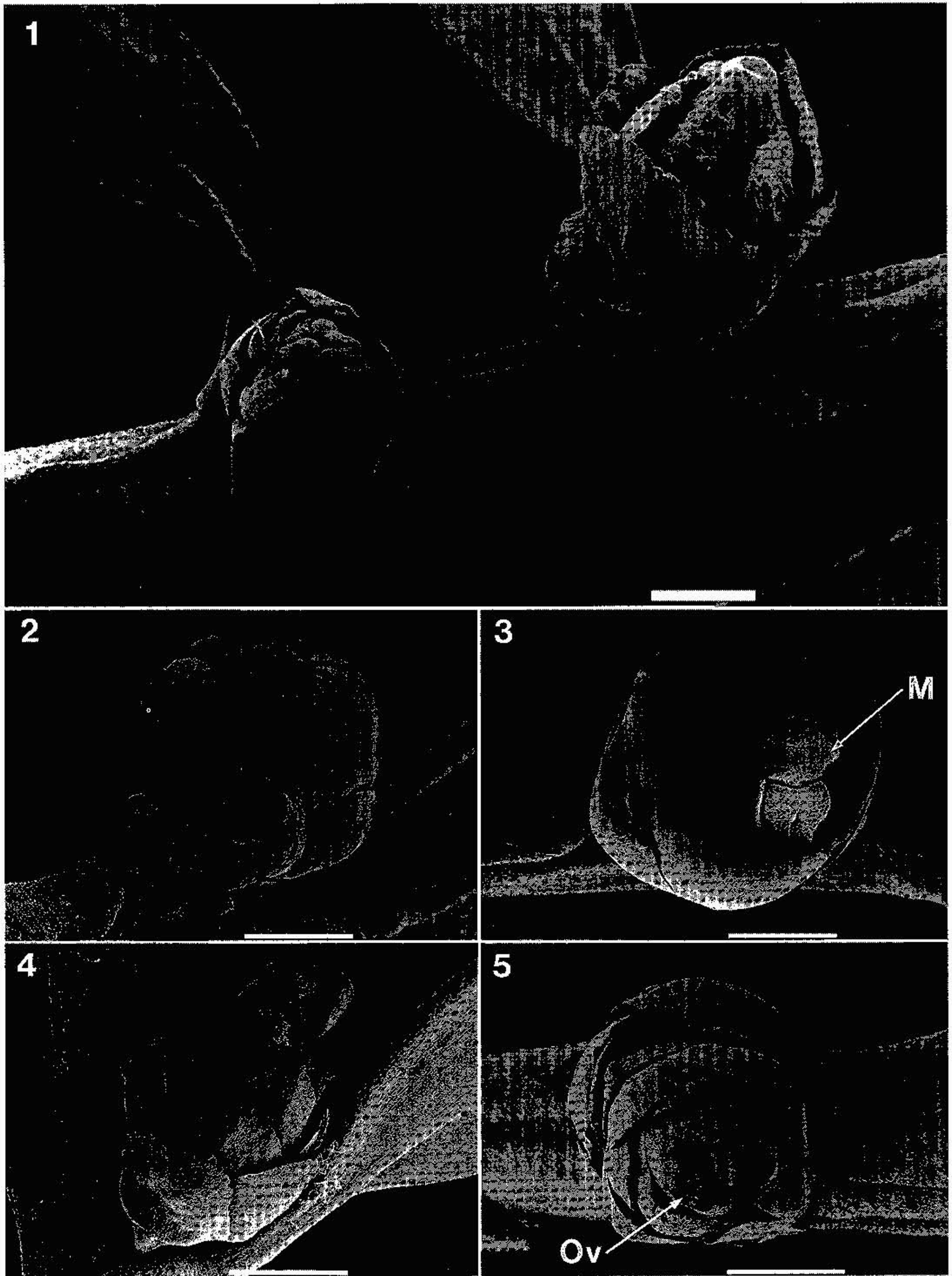
<sup>1</sup>Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Rd., Victoria, BC V8Z 1M5, Canada.

<sup>2</sup>Author to whom all correspondence should be addressed.

TAYLOR, R. L., AND S. TAYLOR. 1981. *Taxus brevifolia* in British Columbia. *Davidsonia* 12(4): 89-94.

Received 28 March 1996

Accepted 5 June 1996



Figs. 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.