Biophenological observation- and information service in GAF, a help for birdstrike-risk forecast

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Statistic investigation about birdstrikeshad the result that on military aircraft most incidents/accidents happened in low level and only 20 - 30 % on the airfields or in the surrounding of the airfields. Moreover statistics show that also during summer- and wintertime birdstrikes occur. These are the facts. During main migration periods in spring and autumn it is possible to observe bird migration by radar and to publish birdtam or forecasts; on airfields it is possible to scare birds by ecological and technical provisions/equipments, but in the surrounding of the airfields it is impossible to do anything.

There are two questions which must be answered : 1. Why migrate birds in summer and winter, what areas will they prefer and why;the answer : in summer migratory movements may be a function of density of population and a function of food; birds prefer areas with intensive agricultural use; in winter migratory flights can be induced by weather - frost-periods - but also by food. 2. Why and when bird appear in the surrounding of an airfield and possibly visit the airfield for a short time for nesting or feeding !? The answer: birds appear in these districts if the offer of food is rich and this happens during special weeks within the vegetation period.

Now the problem : to reduce birdstrikes during the indicated periods in the mentionned areas. That could be reached only by observation of birds, by observation of the vegetational state and by warning pilots. For it is difficult to observe small distance migratory flights of birds in low altitudes we had to go the indirect way over observation of vegetational state and agricultural use in the surrounding of the airfields and elsewhere, that means biophenological observations as they are done in many countries since years.

Since June 1977 the German Military Geophysical Office established a corresponding Service which consists on 120 stations distributed over Germany. These stations observe weekly spe-

cial phenological phases as you can see it on Fig.1) ; f.i.
01 = Beginning of pasture; consequence = flocks of starlings
02 = First mowing; consequence = flocks of starlings
04 = Ploughing; consequence = flocks of gulls,crows,hawks
05 = Seed of corn; consequence = flocks of crows
11 = Harvest of rye; consequence = flocks of starlings,pigeons, sparrows,crows

These observations are transmitted by telex to the German Military Geophysical Office and serve together with other informations as a basis for risk-forecasts. So it is possible to get an idea about vegetation phases which happen and influence migratory movements of birds. From the Civil side of German Weather Service we got such informations about a period of more than 20 years, but the observation stations of the Civil Weather Service are not identic with military airfields; nevertheless they complete the data.

How important these observations are show the following figures which will be examples:

Figure 2 shows the height growth of maize in july/august in various geographical altitudes - I = northern Germany, II = Highland district, III = south of Danube river - . In the northern und southern part of Germany the harvest of mayze can be expected within the following decade. In consequence of harvest flocks of crows and pigeons will arise and therefore corresponding informations can be given to the airfields situated in this area.

Figure 3 shows the growth height of grassland,corn and root vegetable. The data of corn (20 cm) give information that flocks of crows may visit the district for food; the data of grassland(length 40 cm) show that mowing can be expected within the next decade and the starling population will increase; the data of root vegetable show that harvest will happen not before the next 2 months and therefore flocks of pigeons can not be expected.

Figure 4 shows the beginning of corn-cultivation and the difference in the dates until to 1 month in the various parts of Germany. With beginning of cultivation the population

of crows and gulls will increase; therefore also in that case a corresponding warning is possible.

Figure 3 documents the harvest of corn in Germany and shows, dependend on the geographical altitude, differences between july 4th and august 8th. The beginning of harvest marks also the possible beginning of increasing pigeon-,crow- and small bird population.

So, on the basis of this knowledge it will be possible to forecast tendencies about increasing or decreasing bird populations in the surrounding of airfields but also about short- or medium-scale migratory movements of birds which could be important for low level flights.

Fig. 6

Ort:..... Biophänologische Beobachtungen Woche:

(Teil 1)

Lediglich ankreuzen, welche der nachstehenden Aussagen für die Beobachtungswoche zutraf:

00		Keine Änderung gegenüber Vorwoche	21		Kartoffeln, Aufgang
01		Weideauftrieb	22		Kartoffeln, Ernte
02		Heuschnitt (Mahd)	23		Futter-/Zuckerrüben, Aussaat
03		Weideabtrieb	24		Futterrüben, Ernte
04		Pflügen	25		Zuckerrüben, Ernte
05		Getreide, Aussaat	26		Futterpflanzen, Auflauf
06		Wintergerste, Bestocken	27		Futterpflanzen, Schnitt
07		Wintergerste, Gelbreife *)	28		Weißbirke, Laubentfaltung
08		Wintergerste, Ernte	29		Weißbirke, Laubverfärbung
09		Winterroggen, Bestocken	30		Weißbirke, Laubfall
10		Winterroggen, Gelbreife	31		Hainbuche, Laubentfaltung
11		Winterroggen, Ernte	32		Hainbuche, Laubverfärbung
12		Winterweizen, Bestocken	33		Hainbuche, Laubfall
13		Winterweizen, Gelbreife	34		Rotbuche, Laubentfaltung
14		Winterweizen, Ernte	35		Rotbuche, Laubverfärbung
15		Sommergetreide, Bestocken	36		Rotbuche, Laubfall
16		Sommergetreide, Gelbreife	37		Stieleiche, Laubentfaltung
17		Sommergetreide, Ernte	38		Stieleiche, Laubverfärbung
18		Futter-/Körnermais, Auflauf	39		Wildkirsche, Fruchtreife
19		Futtermais, Schnitt	40		Eberesche, Fruchtreife
20		Körnermais, Ernte			

*) Gelbreife = gelblicher Schimmer über Getreidefeld

*) Beispiel für Teil 2: 42 (12) - Wintergerste Halmlänge 13 cm

Datum: Unterschrift:

Schlüsselzahlen (Teil 1) wöchentlich, Schlüsselzahlen und cm-Angaben (Teil 2) *) monatlich bis jeweils donnerstags 1500 Z an die Geophysikst des Flugplatzes Goben bzw. Karten auf dem Postweg monatlich an Amt für Wehrgeophysik - W II 4 Mont Royal, 5580 Traben-Trarbach leiten.

Längen bzw. Höhen der Halme in cm angeben:

41		Wiesen/Weiden/Obergräser	46		Futtermais
42		Wintergerste	47		Körnermais
43		Winterroggen	48		Kartoffeln
44		Winterweizen	49		Futter-/Zuckerrüben
45		Sommergetreide			

Höhenwachstum (Mittelwerte) von Futtermais in den Monaten Juli und August 1977 in den einzelnen Höhenstufen

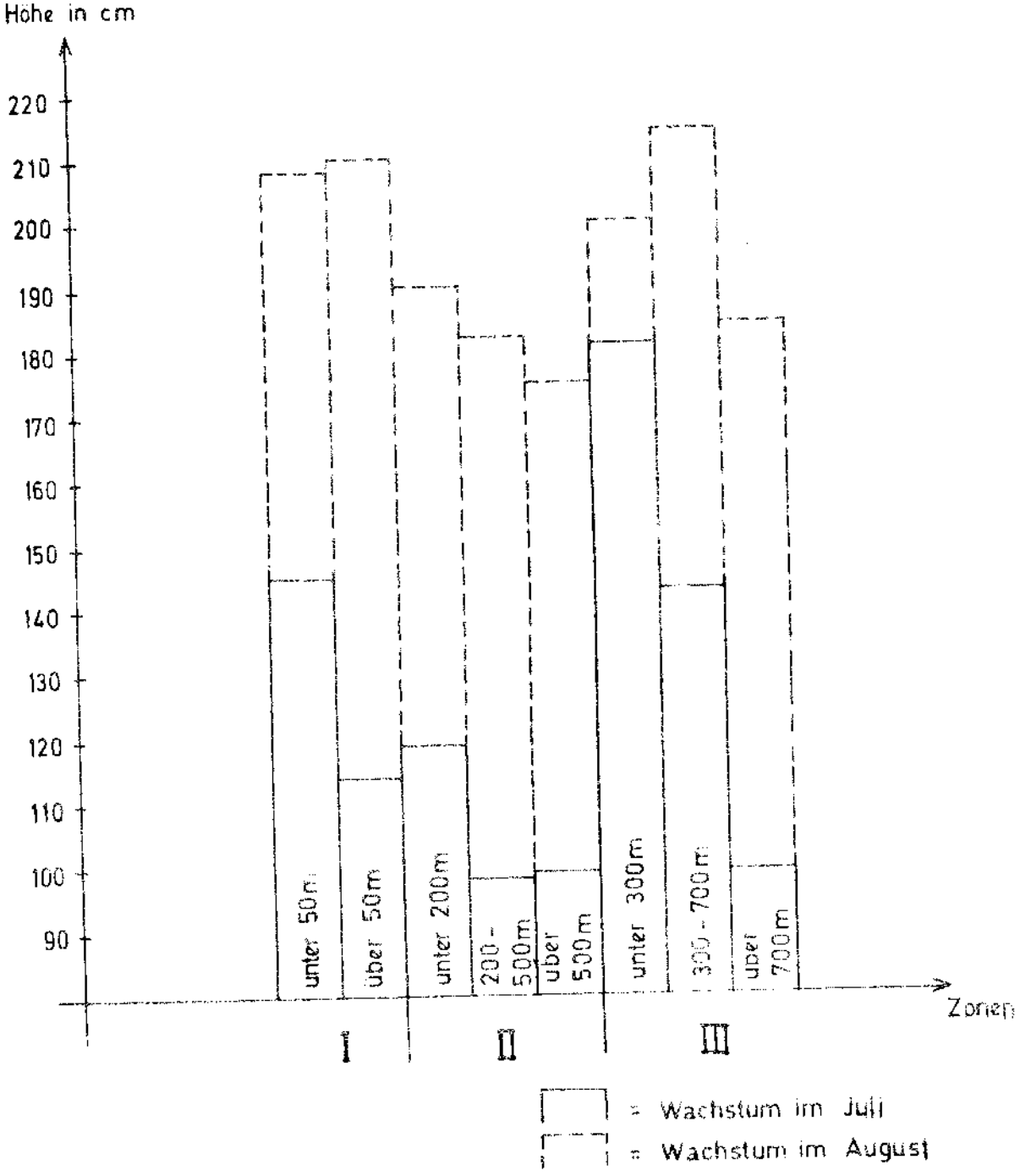


FIG. 3

Geländedatenbank hier: Bewuchshöhen in cm

Gebiet: nördlich 52°24';
Höhenstufe 0-200m

Dekade	Grün-land	Halm-frucht	Blatt-frucht	Sonder-kulturen
01.04. - 10.04.	20	20	5	0
11.04. - 20.04.	20	20	5	0
21.04. - 30.04.	20	20	10	0
01.05. - 10.05.	25	25	10	0
11.05. - 20.05.	30	30	10	20
21.05. - 31.05.	30	30	15	30
01.06. - 10.06.	35	50	20	50
11.06. - 20.06.	40	70	20	60
21.06. - 30.06.	40	90	30	80

Fig. 4

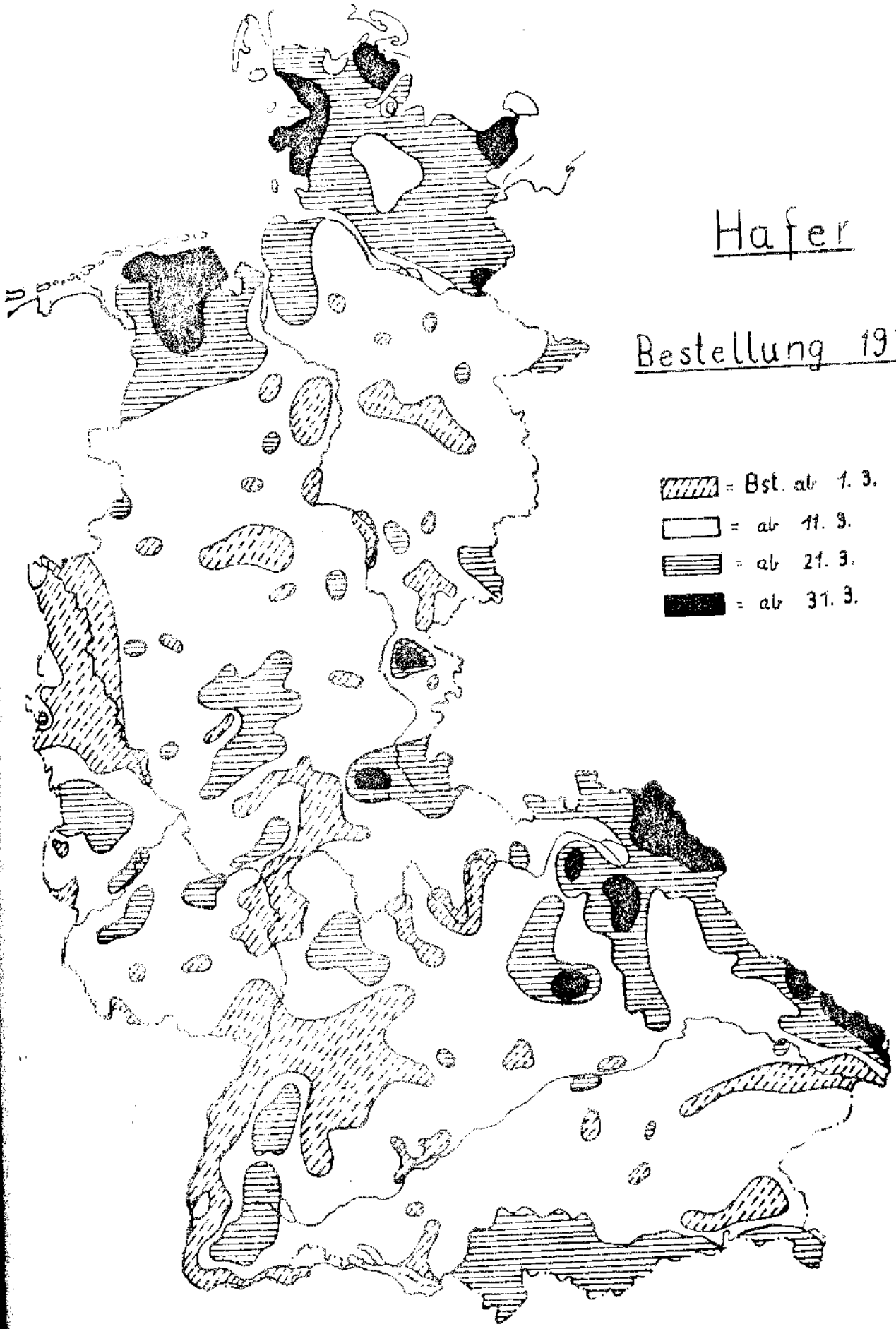
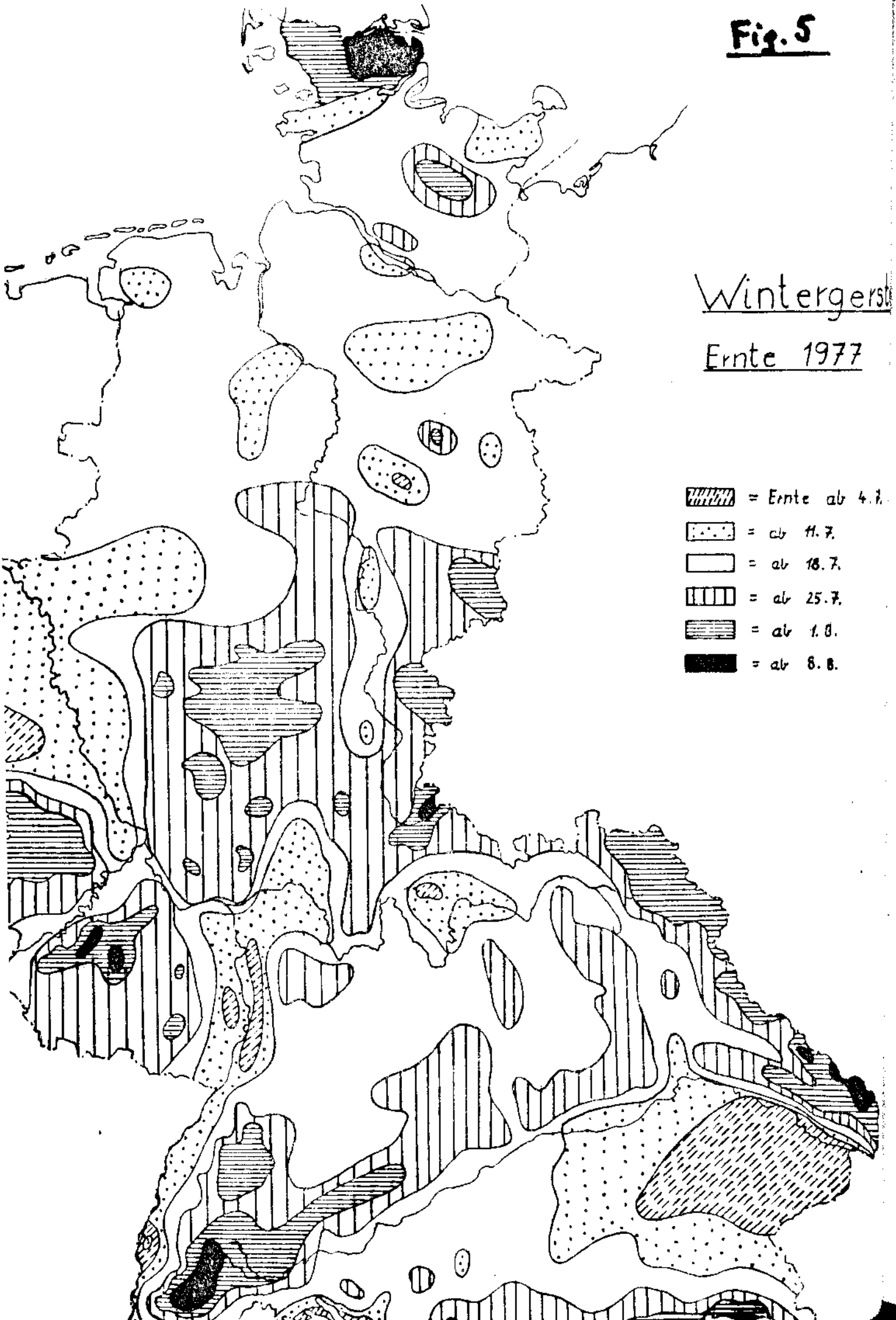


Fig. 5


Wintergerste
Ernte 1977
= Ernte ab 4.7.
= ab 11.7.
= ab 18.7.
= ab 25.7.
= ab 1.8.
= ab 8.8.